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UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION
ENVIRONMENT TEXAS CITIZEN LOBBY, INC., .
and SIERRA CLUB, .
Plaintiffs, .
VS. . Civil Action
No. H-10-CV-4969
EXXONMOBIL CORPORATION, . Houston, Texas
EXXONMOBIL CHEMICAL COMPANY, . February 13, 2014
and EXXONMOBIL REFINING AND SUPPLY . 10:05 a.m.
COMPANY, .
Defendants. .
.

TRANSCRIPT OF PROCEEDINGS
BEFORE THE HONORABLE DAVID HITTNER
BENCH TRIAL
DAY 4 OF 13

APPEARANCES:

FOR THE PLAINTIFFS:
Mr. Joshua R. Kratka
Ms. Heather Govern
NATIONAL ENVIRONMENTAL LAW CENTER
44 Winter Street
4th Floor
Boston, Massachusetts
617.747.4333
917.710.5180
FAX: 617.292.8057
josh.kratka@verizon.net

Mr. David A. Nicholas
20 Whitney Road
Newton, Massachusetts 02460
617.964.1548
FAX: 617.663.6233
dnicholas@verizon.net

PROCEEDINGS RECORDED BY STENOGRAPHIC MEANS,
TRANSCRIPT PRODUCED FROM COMPUTER-AIDED TRANSCRIPTION

APPEARANCES

(continued)

FOR THE PLAINTIFFS:

Mr. Philip Harlan Hilder
Mr. William B. Graham
HILDER & ASSOCIATES, PC
819 Lovett Boulevard
Houston, Texas 77006-3905
713.655.9111
FAX: 713.655.9112

ALSO PRESENT:

Ms. Mary Rock
Paralegal

FOR THE DEFENDANTS:

Mr. Eric J. R. Nichols
BECK REDDEN
515 Congress Avenue
Suite 1750
Austin, Texas 78701
512.708.1000
FAX: 512.708.1002
enichols@beckredden.com

Mr. Bryon A. Rice
Mr. Fields Alexander
Mr. William Brad Coffey
BECK REDDEN
1221 McKinney Street
Suite 4500
Houston, Texas 77010
713.951.6256
713.951.6220
713.951.6274
FAX: 713.951.3720
brice@beckredden.com
falexander@beckredden.com
bcoffey@beckredden.com

1 APPEARANCES

2 (continued)

3 FOR THE DEFENDANTS:

4 Mr. Keith Courtney
5 WINSTEAD PC
6 401 Congress Avenue
Suite 2100
7 Austin, Texas 78701
512.370.2813
8 FAX: 512.370.2850
kcourtney@winstead.com

9 ALSO PRESENT:

10 Mr. David Mantor
11 In-house counsel
EXXONMOBIL

12 Ms. Hien Luu
Paralegal

13
14
15 COURT REPORTER:

16 GAYLE L. DYE, CSR, RDR, CRR
17 515 Rusk, Room 8016
Houston, Texas 77002
18 713.250.5582
19
20
21
22
23
24
25

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1 PROCEEDINGS

2 February 13, 2014

3 THE COURT: Okay. You're up, Counsel.

4 MR. NICHOLAS: Your Honor, before we start, I would

10:05:43 5 just like to say that, because of the length of the various
6 witnesses so far, we may have to take one of our witnesses out
7 of turn which we just talked to counsel about.

8 THE COURT: I have no problem with it unless they have
9 a problem.

10 (The witness, **JEFFREY KOVACS**, called on behalf of the
11 Plaintiff, was previously sworn.)

12 REDIRECT EXAMINATION

13 (continued)

14 BY MR. NICHOLAS:

10:05:59 15 **Q** Good morning, Mr. Kovacs.

16 **A** Good morning.

17 **Q** Mr. Kovacs, yesterday you testified about the TCEQ
18 investigations that are done for reportable emission events.

19 Do you recall that?

10:06:11 20 **A** Yes, sir, I do.

21 **Q** And I believe that your testimony was that TCEQ always
22 investigates a reportable emissions event?

23 **A** Yes, sir, that's correct.

24 **Q** Now, TCEQ does not always investigate recordable emission
10:06:29 25 events, correct?

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1 **A** There is a different review for recordable events than
2 there is for reportable events.

3 **Q** My question was -- well, you don't send the recordable --
4 you don't send the recordable information to TCEQ, correct?

10:06:46 5 **A** Yes, sir, that is correct.

6 **Q** All right. And TCEQ -- when TCEQ investigates the complex
7 for these reportable emissions, they do not always send an
8 investigator out to your complex, correct?

9 **A** Yes, sir, that is correct.

10:07:04 10 **Q** Sometimes TCEQ phones in the investigation, correct?

11 **A** Sometimes the investigation is done via phone and e-mail
12 and letters.

13 **Q** Sometimes the investigation is just done by phone, right?

14 **A** I'd have to look at a particular instance. I can't think
10:07:34 15 of an instance where there was just a single phone conversation
16 related to a reportable event.

17 MR. NICHOLAS: Could we have Exhibit 20W put on the --
18 BY MR. NICHOLAS:

19 **Q** Mr. Kovacs, do you recall testifying about a pinhole leak
10:08:01 20 yesterday when you were discussing -- when you were having
21 discussions Mr. Nichols?

22 **A** Yes, sir, I do.

23 **Q** And you talked about this photograph from one of the
24 emission events, correct?

10:08:19 25 Do you recall that?

Kovacs - Redirect/Nicholas

1 **A** Yes, sir, I do.

2 MR. NICHOLAS: Okay. Do you know what emission event
3 it is?

4 MS. MARY ROCK: No. 159900.

10:08:20 5 MR. NICHOLAS: Oh, all right.

6 BY MR. NICHOLAS:

7 **Q** So this -- this photograph relates to Emission Event 15 --

8 MS. MARY ROCK: -- 9900.

9 BY MR. NICHOLAS:

10:08:40 10 **Q** -- 159900. Do you recall that?

11 **A** Yes, sir, I do.

12 **Q** All right. Now, there's a pinhole leak here.

13 Do you see that?

14 **A** Yes, sir, I do.

10:08:46 15 **Q** All right. 587 pounds of emissions came out of that
16 pinhole? 587 pounds came out of that pinhole?

17 **A** Yes, sir, that's correct.

18 **Q** And the -- and those were 587 pounds of flammable emissions
19 came out of that pinhole?

10:09:05 20 **A** 587 pounds of hydrocarbons, yes, sir.

21 **Q** And the 587 pounds -- well, hydrocarbons are flammable,
22 right?

23 **A** Yes, sir.

24 **Q** So 587 pounds of flammable emissions came out of that
10:09:21 25 pinhole?

Kovacs - Redirect/Nicholas

1 **A** Yes, sir.

2 **Q** Okay.

3 MR. NICHOLAS: Can we go to the first page of the
4 report?

10:09:31 5 BY MR. NICHOLAS:

6 **Q** All right. Now, this is a PowerPoint that Exxon produced,
7 correct?

8 **A** Yes, sir, that's correct.

9 **Q** And this PowerPoint is -- was for its own internal purposes
10:09:54 10 or was this for the purposes of this lawsuit?

11 **A** This was an internal purpose.

12 **Q** And this is a -- this was a root cause analysis that Exxon
13 performed on Emissions Event 159900?

14 **A** Yes, sir, that's correct.

10:10:11 15 **Q** And actually, before we get into this, there was a question
16 yesterday about whether the emissions from that pinhole leak
17 were -- were at ground level. In fact, those were 50 feet up;
18 is that right? The emissions?

19 **A** I believe they were on a -- the pipe is on an elevated
10:10:32 20 platform. Yes, sir, I think that's correct.

21 **Q** And the elevated platform is about 50 feet above the
22 ground; is that right?

23 **A** I don't know the height, but I believe that's correct.

24 **Q** All right. Now -- okay. Do we have the date here? Yes.

10:10:50 25 All right. So this is a December 19, 2011, root cause analysis

Kovacs - Redirect/Nicholas

1 of that pinhole leak that we just saw, right?

2 **A** Yes, sir, that's correct.

3 **Q** And is it standard operating procedure for Exxon to make
4 PowerPoints in response to emission events?

10:11:08 5 **A** It depends on the event, on the site, and on the way the
6 investigation summary is communicated or documented.

7 **Q** Was this document given to TCEQ?

8 **A** I do not know.

9 **Q** Is it standard operating procedure to give a root cause --
10:11:27 10 an internal root cause analysis to TCEQ?

11 **A** What I would say is all information asked for at TCEQ
12 during the time of their investigation would be provided. If
13 this investigation happened after the TCEQ investigation, well,
14 then it wouldn't be possible to provide it because it didn't
10:11:48 15 exist at the time.

16 **Q** So after the investigation is concluded and Exxon gets more
17 information on the root cause of an emission event, you don't
18 give it to TCEQ?

19 **A** No, sir, that's not what I said. What I said was I don't
10:11:58 20 know when the TCEQ investigation was conducted relative to this
21 one.

22 **Q** Well, let me go back. See -- well, this says up here
23 "ExxonMobil Proprietary." What does that mean?

24 **A** It means that it contains information that would be
10:12:14 25 proprietary, potentially proprietary to our operations.

Kovacs - Redirect/Nicholas

1 Q All right. But, now --

2 A But that would not preclude us from sharing it with the
3 TCEQ.

4 Q Okay. Now, again can you recall any instance where Exxon
10:12:29 5 shared a proprietary root cause analysis PowerPoint with TCEQ?

6 A Yes. I can't think of a specific -- a specific instance;
7 but as part of my responsibility as the environmental supervisor
8 for release reporting, we do provide them, if confidential,
9 information under privilege stamp or confidential stamp so that
10:12:53 10 they can review those investigations.

11 Q And you actually give them the PowerPoints?

12 A Yes, sir.

13 Q Okay. But you don't know whether this PowerPoint was given
14 to them?

10:13:00 15 A That's correct.

16 Q All right.

17 MR. NICHOLAS: Can we go to the investigation report.
18 BY MR. NICHOLAS:

19 Q All right. Now this is the investigation report from that
10:13:27 20 event.

21 MR. NICHOLAS: And this is -- can you tell me what
22 page it is on? This is still within DX20W; is that right?

23 MS. MARY ROCK: Uh-huh.

24 BY MR. NICHOLAS:

10:13:48 25 Q All right. And we're on 174841 and what does the

Kovacs - Redirect/Nicholas

1 investigation report say? Can you read that out loud.

2 **A** "Exxon was unable to determine why this spot had corroded."

3 **Q** Okay. But in fact, you had determined why that spot had
4 corroded, correct?

10:14:06 5 **A** I think that sentence is consistent with our incident
6 investigation.

7 **Q** Well, actually, didn't you -- didn't you tell the Court
8 yesterday that it turned out that the -- there was a coating
9 problem and that's why the spot had corroded?

10:14:18 10 **A** No. I think what the investigation report said was that
11 there was a coating that was applied appropriately but the
12 coating failed and there was no indication as to why that
13 protective coating failed.

14 **Q** That's what you're saying that says?

10:14:34 15 **A** Yes, sir.

16 **Q** Okay. Now, Mr. Kovacs, is smoking allowed at the process
17 units at the Baytown Complex?

18 MR. NICHOLS: Your Honor, I'll object to relevance.

19 THE COURT: What's the relevance?

10:14:59 20 MR. NICHOLAS: I'm going to go to ignition sources.

21 MR. NICHOLS: Your Honor, we're here for an emissions
22 events analysis under the Clean Air Act. There's no relevance
23 to asking about protocols with respect to smoking at the Baytown
24 Complex.

10:15:13 25 MR. NICHOLAS: I'm leading up to a discussion of a

Kovacs - Redirect/Nicholas

1 specific incident that Mr. Nichols --

2 THE COURT: What kind of smoking? People smoking?

3 MR. NICHOLAS: Cigarettes, yeah.

4 THE COURT: Sustain the objection.

10:15:23 5 MR. NICHOLAS: All right.

6 BY MR. NICHOLAS:

7 Q Now, there are flammable gasses on site at the Baytown
8 Complex, correct?

9 A Yes, sir.

10:15:34 10 Q And the complex takes certain precautions to prevent
11 ignition of those flammable gasses on site, correct?

12 A Yes, sir.

13 Q And could you just tell the Court what -- what types of
14 prevention measures the complex takes to prevent ignition of the
10:15:56 15 flammable sources?

16 A Ignition sources are not allowed in process areas.
17 Potential ignition sources are not allowed in process areas.

18 Q And could you please just tell the Court what -- what are
19 some of the potential ignition sources that are not allowed in
10:16:16 20 the process areas in the Baytown Complex?

21 A Vehicles, anything that has a potential ignition source.
22 So for example, our -- our personnel will carry pagers. The
23 pagers are required to be intrinsically safe, which means that
24 they do not have the potential as an ignition -- as a -- as a
10:16:41 25 source.

Kovacs - Redirect/Nicholas

1 Q And a car is not allowed in because, if you turn the car
2 on, that's an ignition possibility?

3 A An automobile in itself is not a potential ignition source.
4 So -- but it is a -- it is a precaution to keep vehicles out of
5 operating areas.

10:17:08

6 Q Now, there's a lot of discussion yesterday about a
7 smoldering board. Do you recall?

8 A Yes, sir.

9 Q A smoldering board is a potential ignition source, correct?

10:17:21

10 A Yes, sir.

11 Q You're concerned about a smoldering board in the Baytown
12 Complex, correct?

13 A Yes, sir. To -- yes, sir.

14 Q And you're concerned about a smoldering board in the
15 Baytown Complex because it's a potential ignition source,
16 correct?

10:17:45

17 MR. NICHOLS: Your Honor, again, I'll object to
18 relevance. It has nothing to do with the air emission claims
19 that the Plaintiffs are making in the case.

10:17:58

20 THE COURT: Overruled.

21 THE WITNESS: A smoldering board is a potential
22 ignition source, yes, sir.

23 BY MR. NICHOLAS:

24 Q You're concerned about a smoldering board because it's a
25 potential ignition source, correct?

10:18:18

Kovacs - Redirect/Nicholas

1 MR. NICHOLS: Your Honor, the question has been asked
2 and answered.

3 THE COURT: Sustained.

4 BY MR. NICHOLAS:

10:18:26 5 Q Now if a gas -- flammable gas is ignited at the
6 petrochemical -- at the Baytown Complex, that could cause
7 additional problems, correct?

8 A I think we're starting to have a safety discussion that's
9 getting outside of my area of expertise.

10:18:45 10 MR. NICHOLS: Also object to relevance, your Honor.

11 THE COURT: Well, he said it's outside of his area.

12 BY MR. NICHOLAS:

13 Q Now, just as you're concerned about a smoldering board
14 being an ignition source at the Baytown Complex, can we agree
10:19:01 15 that community members in Baytown should be concerned about a
16 smoldering board at the Baytown Complex?

17 MR. NICHOLS: Objection, your Honor. Calling for
18 complete speculation on behalf of this witness about what
19 community members would be -- would be concerned about.

10:19:17 20 THE COURT: Read the question back. I just want one
21 portion that I'm looking for.

22 (The last question was read.)

23 THE COURT: Sustain the objection.

24 BY MR. NICHOLAS:

10:19:53 25 Q As far as you're concerned, should there ever be a

Kovacs - Redirect/Nicholas

1 smoldering board on site at the Baytown Complex?

2 MR. NICHOLS: Your Honor, the question has been asked
3 and answered. It's repetitive.

4 THE COURT: Overruled.

10:20:03 5 THE WITNESS: Could you repeat the question, please.

6 MR. NICHOLAS: Could you read --

7 THE COURT: All right. Now, wait a second. We got to
8 start moving this along. Okay.

9 You need to answer right away.

10:20:11 10 And make your questions more pointed. Okay.
11 You're entitled to go into this area, but too much delay on each
12 side. Let's move it along. Ask it again, sir.

13 MR. NICHOLAS: Can you repeat the question.

14 (The last question was read.)

10:20:39 15 THE WITNESS: Our goal is to prevent --

16 THE COURT: Yes or no. Or if you can't answer it yes
17 or no, state it, that you can't answer yes or no.

18 THE WITNESS: I can't answer that question yes or no.

19 BY MR. NICHOLAS:

10:20:48 20 **Q** As far as you're concerned, should there ever be a fire at
21 the Baytown Complex?

22 **A** I can't answer that question as a yes or no.

23 **Q** All right. We also talked about hurricanes yesterday.

24 **A** Yes, sir.

10:20:58 25 **Q** And you had, with Mr. Nichols, gone through some of the

Kovacs - Redirect/Nicholas

1 disaster proclamation from the governor. Do you recall that?

2 **A** Yes, sir, I do.

3 **Q** And you read out --

4 THE COURT: Is that from the governor?

10:21:14 5 MR. NICHOLAS: Yes.

6 THE COURT: The one from the governor?

7 MR. NICHOLAS: Yes.

8 BY MR. NICHOLAS:

9 **Q** And you read it or, I guess, it was shown on the screen,
10:21:22 10 correct?

11 **A** Yes, sir.

12 **Q** Now, before this lawsuit, had you ever seen that -- that
13 proclamation?

14 **A** Yes, sir.

10:21:27 15 **Q** You did?

16 **A** Yes, sir.

17 **Q** As part of your job, right?

18 **A** Yes, sir.

19 **Q** All right. And as a matter of fact, he showed you two
10:21:34 20 documents relating to the governor's proclamation, correct?

21 **A** Yes, sir.

22 **Q** But there were more, weren't there? Were there more
23 documents relating to the Hurricane Ike disaster proclamation?

24 **A** I do not recall.

10:21:55 25 **Q** You would have read it as part of your job, though. It's

Kovacs - Redirect/Nicholas

1 in the environmental section, right?

2 MR. NICHOLS: Your Honor, read -- read what? I'll
3 object.

10:22:09

4 THE COURT: Any addendums or additional documents
5 attached to the two ordered by the governor. That's what he's
6 asking about. Were there any, did he read them?

7 THE WITNESS: So there may have been more, but my
8 responsibility as the environmental supervisor was not to worry
9 about the disaster.

10:22:25

10 THE COURT: Hold it. Hold it. Yes or no? If you
11 can't -- we understand that there may be more that you may not
12 be aware of. But if it's an answer yes or no, yes or no or you
13 can't answer it yes or no.

10:22:38

14 By the way, "Can't answer it yes or no" is not
15 evading the question. I understand that. Sometimes the jury
16 doesn't. But I understand that. The precise wording you
17 disagree with, so you can't answer it yes or no.

18 THE WITNESS: Yes, your Honor.

10:22:49

19 THE COURT: Is that your position on that last
20 question? Now you want that read back. All right. Me, too.

21 THE WITNESS: No -- the answer -- it's not a yes-or-no
22 question. I can answer that, your Honor.

23 MR. NICHOLAS: Can I have the ELMO activated, please?

24 THE COURT: Sure.

10:23:05

25 //

Kovacs - Redirect/Nicholas

1 BY MR. NICHOLAS:

2 **Q** All right. This is Plaintiffs' Exhibit 578.

3 THE COURT: I think the projector has to turn on
4 eventually.

10:23:18 5 (Discussion off the record.)

6 BY MR. NICHOLAS:

7 **Q** All right. This is Plaintiffs' Exhibit 578. It is the
8 "Regulatory Guidance in Response to Hurricane Ike from the
9 Executive Director of the Texas Commission on Environmental
10:23:30 10 Quality," colon, "Air."

11 Sir, have you ever read this document?

12 **A** I do not recall.

13 **Q** All right. Let's take a look at the third page of
14 Plaintiffs' Exhibit 578. I want you to read the highlighted
10:23:48 15 portions out loud.

16 **A** "What should I do if I need to temporarily exceed maximum
17 allowable emission rates or temporarily increase production,
18 capacity or throughput stated in my authorization?"

19 "In no event shall authorized regulated entities
10:24:08 20 create conditions of air pollution or exceed national ambient
21 air quality standards."

22 **Q** All right. And you recall that air pollution is defined in
23 the Texas statute, correct? Didn't we go over that?

24 **A** Yes, sir, we did.

10:24:21 25 **Q** All right. And this is the definition of air pollution.

Kovacs - Recross/Nichols

1 And could you just read that out loud?

2 **A** Yes, sir.

3 "Number 3: Air pollution means the presence in
4 the atmosphere of one or more air contaminants or combination of
5 air contaminants in such concentration and of such duration
6 that, 'A,' are or may tend to be injurious to or to adversely
7 affect human health or welfare, animal life, vegetation or
8 property or, 'B,' interfere with the normal use or enjoyment of
9 animal life, vegetation or property."

10:24:33 10 **Q** Thank you.

11 MR. NICHOLAS: No further questions.

12 MR. NICHOLS: Just very briefly, your Honor.

13 Could we switch over to our side of the computer,
14 sir?

10:25:07 15 I want you to put up Slides -- these are Slides
16 1002, in evidence.

17 (Discussion off the record.)

18 RECROSS EXAMINATION

19 BY MR. NICHOLS:

10:25:54 20 **Q** We're looking at 1002 exhibit and this was an exhibit, I
21 believe, that Mr. Nicholas showed you late yesterday, correct?

22 **A** Yes, sir, I do recall that.

23 **Q** And he started asking you some questions about improvement
24 trends, based on this slide. Do you recall that?

10:26:09 25 **A** Yes, sir, I do.

Kovacs - Recross/Nichols

1 **Q** So do you recall when it was that the Plaintiffs in this
2 case provided notice that they intended to sue the ExxonMobil
3 Defendants in this citizen suit?

4 **A** Yes, sir. It was late November, 2009.

10:26:26

5 **Q** So in terms of this trend line that the Court can see,
6 we're about halfway through the trend line as to when the
7 Plaintiffs provided notice, correct?

8 **A** Yes, sir, that's correct.

10:26:41

9 **Q** And then Mr. Nicholas started asking questions about -- I
10 think, about the percentage of improvement that had occurred
11 between 2005 and that time versus what's happened after?

12 **A** Yes, sir, that's correct.

10:27:00

13 **Q** So just tell the Court, in your experience, working out
14 there since 2005, had the Baytown Complex made significant
15 improvement with respect to the number of reportable events
16 complex-wide between 2005 and the time that Plaintiffs in this
17 case first provided notice of their intent to sue?

18 **A** Yes. From 2005 all the way up through the end of 2009,
19 there was significant improvement.

10:27:21

20 **Q** And had that improvement continued since that notice was
21 received?

22 **A** Yes, sir. And that trend line continues on a relatively
23 linear basis.

10:27:32

24 **Q** In your experience, out there working every day, boots on
25 the ground, Baytown Complex from 2009 forward, from where you

Kovacs - Recross/Nichols

1 sit, Mr. Kovacs, is that continued improvement a result of the
2 Plaintiffs telling ExxonMobil Defendants that they're going to
3 get sued?

4 **A** No, sir, it is not.

10:27:45 5 **Q** What is it attributable to?

6 **A** Our environmental business plans and our corporate policies
7 that drive continuous improvement year over year.

8 **Q** Now, you were also asked certain questions by Mr. Nicholas
9 about penalties and whether -- you know, if you got fined
10:28:02 10 \$37,500 for a report being late, whether you would -- that would
11 eliminate it. If -- if someone were to give you a \$37,500 fine
12 if that would stop reports from being late ever in the future?

13 **A** I recall that, yes, sir.

14 **Q** Mr. Kovacs, is it abundantly clear to everybody in this
10:28:20 15 courtroom that you have a difficult time with -- the kind of
16 person you are, with your education and training, that you are
17 not perfect?

18 **A** Yes, sir. I think that's obvious.

19 **Q** And is -- is -- does that personal feeling that you have --
10:28:37 20 just describe to the Court, in your own words, how that relates
21 to the continuous improvement culture that you've talked about.

22 **A** Well, put simply, the motivation to continue to improve
23 isn't related to the size of the fine. The motivation to
24 continue to improve is based on our corporate business plans and
10:28:57 25 our corporate -- corporate policies and our desire to get

Kovacs - Recross/Nichols

1 better.

2 **Q** Now, are you telling this Court -- as hard as it is for you
3 to admit this, are you telling the Court that the ExxonMobil
4 Baytown Complex will be perfect in its compliance with respect
10:29:21 5 to filing reports, that every human being will be perfect in the
6 future?

7 **A** I accept that we will not be.

8 **Q** Now, with respect to other questions that you were asked
9 late yesterday, as the Judge just said, sometimes you can't
10:29:39 10 answer questions yes or no based on the wording of the question.
11 Did you hear the Court --

12 **A** Yes, sir, I did.

13 **Q** -- tell you that?

14 Now with respect, there were certain questions
10:29:49 15 asked last night when Mr. Nicholas was asking you questions
16 about, you know, don't you want clean air, don't you want to
17 breath clean air, all that kind of stuff, you couldn't answer
18 certain of those questions yes or no.

19 **A** I recall that, yes, sir.

10:30:02 20 **Q** So explain to the Court, in your own words, not restricting
21 you to a yes-or-no answer, why you can't answer those types of
22 questions in a case like this yes or no.

23 MR. NICHOLAS: Objection. He's not refer --
24 Mr. Nichols is not referring to any specific questions.

10:30:19 25 THE COURT: I understand that. I'll let him do it on

Kovacs - Recross/Nichols

1 a general policy matter. I understand. Thank you.

2 THE WITNESS: So yesterday afternoon, I was asked
3 questions about air quality and there was an underlying
4 assumption in there that -- that didn't allow for a yes-or-no
5 answer?

10:30:31

6 BY MR. NICHOLS:

7 Q What was the underlying assumption?

8 A The underlying assumption was that there was -- there was
9 no standard applied, that the only appropriate standard would be
10 no air emissions.

10:30:43

11 Q No -- no pollutants in the air?

12 A Correct.

13 Q And is that a standard, in terms of your background and
14 experience, that you feel comfortable saying that air that has
15 no pollutants is the only standard available?

10:31:00

16 A No. My standard would be what the agency's standard is.
17 Standard of air quality that is protective of human health and
18 the environment.

19 Q Now, you were asked certain questions about the -- this
20 morning about the hurricane events, correct?

10:31:20

21 A Yes, sir.

22 Q And you were asked to review a very specific part of
23 Exhibit 578.

24 MR. NICHOLS: And could we actually ask you guys to
25 put that up because I think the copy we got from you is not what

10:31:29

Kovacs - Recross/Nichols

1 was shown to the Court.

2 MS. MARY ROCK: We have a copy right here.

3 MR. NICHOLS: So if we look at the -- your Honor, if I
4 could have the --

10:31:55 5 THE COURT: We got it.

6 BY MR. NICHOLS:

7 Q So you were asked to look at specific language. "What
8 should I do if I need to temporarily exceed maximum allowable
9 emission rates?"

10:32:07 10 A Yes, sir.

11 Q This last part, it doesn't relate, right? You weren't
12 temporarily increasing your production, capacity or throughput
13 during Hurricane Ike, right?

14 A Yes, sir, that is correct. That would not have applied to
10:32:20 15 our situation.

16 Q You shut it down, right?

17 A Yes, sir.

18 Q All right. So "If the exceedance is directly related to
19 disaster prevention or response, no prior approval is
10:32:30 20 necessary."

21 Is that what that provided?

22 A Yes, sir, that's what that says.

23 Q Is that consistent with your understanding of how
24 regulatory authorities acted during Hurricane Ike?

10:32:41 25 A Yes, sir, it is.

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1 Q "The owner or operator shall keep records of the activity,
2 including the amount and times of emissions, and shall submit
3 those records as soon as practicable to the TCEQ regional office
4 that serves the county in which the facility is located."

10:32:58

5 Did I read that correctly?

6 A Yes, sir, you did.

7 Q And did the Baytown Complex keep records of the activities
8 that were engaged in during Hurricane Ike?

9 A Yes, sir, we did.

10:33:09

10 Q Did the Baytown Complex submit those records as soon as
11 practicable to the TCEQ regional office, the Houston regional
12 office, that serves Harris County in which the Baytown Complex
13 is located?

14 A Yes, sir, we did.

10:33:25

15 Q And -- and what happened as a result of your submitting
16 those records? Did the TCEQ take any kind of administrative or
17 enforcement action in response to you-all doing what you needed
18 to do to shut that facility down in the wake of that large
19 storm?

10:33:46

20 A No, sir, they did not.

21 Q And so you under -- you understand that what the Plaintiffs
22 are doing now is coming back behind what the TCEQ did during the
23 storm and are now asking for a penalty that the TCEQ did not
24 seek for the reasons we've discussed?

10:34:08

25 MR. NICHOLAS: Objection. Leading.

Kovacs - Recross/Nichols

1 THE COURT: Overruled.

2 THE WITNESS: Yes, sir I understand that.

3 BY MR. NICHOLS:

4 Q And just to make sure the record is clear, in terms of
10:34:20 5 witnesses that the Court may be hearing from shortly, with
6 respect to those incident reports that are -- that are out
7 there, have those been submitted in discovery to the Plaintiffs?

8 A Yes, sir, they have.

9 Q So have the Plaintiffs and their experts had access to
10:34:39 10 those detailed root cause analyses?

11 A Yes, sir, they have.

12 Q And do those root cause analyses set forth the detailed
13 investigations, the internal investigations, that demonstrate
14 not only root cause but the process by which the Baytown Complex
10:34:56 15 gets to the root cause of incidents?

16 A Yes, sir, they do.

17 MR. NICHOLS: Pass the witness.

18 MR. NICHOLAS: No further questions.

19 THE COURT: You may step down. You're excused.
10:35:42 20 You're free to leave. You may remain in the courtroom if you
21 like, but you're free to leave.

22 MR. NICHOLS: Your Honor, the only thing I'll say,
23 there's always a possibility he will be recalled. So out of an
24 abundance of caution, we're going to actually keep him under the
10:35:52 25 rule.

Kovacs - Recross/Nichols

1 THE COURT: It has to be on something that was not --

2 MR. NICHOLS: Yes, sir.

3 THE COURT: -- was not covered.

4 MR. NICHOLS: Yes, sir.

10:35:56 5 THE COURT: All right.

6 Remain under the rule then.

7 Before I forget, as I mentioned, I guess, last
8 week, on Friday we begin at 11:30 in the morning, okay? Fridays
9 we begin at 11:30 in the morning.

10:36:07 10 Also, let me ask The plaintiff this -- and I'm
11 sure -- I'm pretty sure I know it; but the burden of proof,
12 what's the burden of proof that you have to prove each element
13 of your request by? Is it -- it's by a preponderance of the
14 evidence, I would assume.

10:36:24 15 MR. NICHOLAS: Yes, I believe so, your Honor, although
16 it's a strict liability statute.

17 MR. NICHOLS: That doesn't affect the burden of proof.

18 THE COURT: Okay. What -- all right. Proof of the
19 underlying -- of the underlying causes. In other words, let's
10:36:36 20 say, on strict liability or whatever, you got to show some
21 facts, right? You got to show something that now fits into
22 that?

23 MR. NICHOLAS: Correct.

24 THE COURT: Okay.

10:36:44 25 MR. NICHOLAS: Correct. And of course, we're doing

Kovacs - Recross/Nichols

1 that by -- with the records.

2 THE COURT: Again, the question is you agree burden of
3 proof is a -- I have a hybrid case -- this is a -- a hybrid --

4 MR. NICHOLAS: Oh, no. This is a -- this is a -- it's
10:36:59 5 a preponderance of the evidence and a strict liability case
6 except for whatever affirmative defenses.

7 THE COURT: That's what I got next; but as far as
8 you're concerned, I just want to make sure that there's no, you
9 know, clear and convincing or whatever sneaking in there to
10:37:14 10 certain elements.

11 MR. NICHOLAS: Right. The traditional -- it's the
12 same burden --

13 THE COURT: You can't say it's a run-of-the-mill civil
14 case, but I understand.

10:37:22 15 MR. NICHOLAS: It is a preponderance of the evidence
16 except for the burden shifts on things like the hurricanes, the
17 affirmative defenses. That's not our burden.

18 THE COURT: On the affirmative defenses, burden of
19 proof is?

10:37:33 20 MR. NICHOLS: Preponderance of the evidence, Judge.

21 THE COURT: Just want to make that clear because
22 sometimes in these technical statutes, looks like punitive
23 damages or whatever, it rises just a click up.

24 All right, call your next witness.

10:37:50 25 MR. KRATKA: Plaintiffs call Keith Bowers.

Bowers - Direct/Kratka

1 And your Honor, for this witness, there will be a
2 number of exhibits in Notebooks 18 and 19. It may be easier --

3 THE COURT: Okay. I'll pull them as soon as --

4 You've already been sworn, sir; is that correct?

10:38:18 5 Have you been sworn?

6 THE WITNESS: No, sir.

7 THE COURT: All right. Raise your right hand to be
8 sworn, sir.

9 (The witness, **KEITH EVANS BOWERS**, called on behalf of the
10:38:23 10 Plaintiffs, was sworn.)

11 THE COURT: Go right ahead.

12 MR. KRATKA: Thank you.

13 DIRECT EXAMINATION

14 BY MR. KRATKA:

10:38:33 15 **Q** State your name for the record, please.

16 **A** My name is Keith, middle initial E. for Evans, last name
17 Bowers, B-o-w-e-r-s.

18 **Q** And Mr. Bowers, have you been retained by the Plaintiffs in
19 this case to provide expert testimony?

10:38:48 20 **A** I have.

21 **Q** And are you being paid by the Plaintiffs for your work in
22 this case?

23 **A** I have.

24 **Q** And what is the hourly rate you're being paid?

10:38:55 25 **A** It's \$100 per hour.

Bowers - Direct/Kratka

1 Q And are you an engineer?

2 A I am.

3 Q What type of engineer are you?

10:39:03

4 A My degree is in chemical engineering. That has been one of
5 the major areas of my practice.

6 Q And have you also practiced as a process engineer?

7 A I have, yes.

8 Q I'm just going to give you a copy of Plaintiffs'
9 Exhibit 432, which is your curriculum vitae.

10:39:32

10 Mr. Bowers, I'm going to give you, also, a copy
11 of Notebooks 18 and 19.

12 THE COURT: Again, what was the number for the CV?

13 MR. KRATKA: Plaintiffs' Exhibit 432.

14 THE COURT: Give me one second.

10:39:47

15 MR. KRATKA: Yes, that's in 19.

16 THE COURT: Okay. Got it.

17 BY MR. KRATKA:

18 Q And this is -- is this a current version of your CV?

10:40:09

19 A No, sir. It does not include my expert witness in a trial
20 against British Petroleum --

21 Q Okay.

22 A -- in Texas City.

23 Q All right. We'll get to that and I'll ask you about
24 that --

10:40:14

25 THE COURT: Where was that case? What court? State

Bowers - Direct/Kratka

1 or Federal?

2 THE WITNESS: Galveston.

3 THE COURT: Galveston? State or Federal?

4 THE WITNESS: State.

10:40:21 5 THE COURT: State court?

6 THE WITNESS: Yes, it was.

7 THE COURT: Okay.

8 BY MR. KRATKA:

9 Q And this CV was attached as Exhibit 2 to your supplemental
10 expert report in this case?

11 A Yes, sir.

12 Q And you said you hold a degree in chemical engineering.
13 From what college did you earn the degree?

14 A That McNeese State University in Lake Charles, Louisiana.

10:40:45 15 THE COURT: Having spent time at Fort Polk, I'm well
16 familiar with Lake Charles, Louisiana. That was -- that was a
17 couple steps up from Leesville, even though you went south.

18 BY MR. KRATKA:

19 Q And what did -- what year did you receive your degree?

10:40:58 20 A 1969.

21 THE COURT: All right. Hang on a second. Off the
22 record.

23 (Discussion off the record.)

24 BY MR. KRATKA:

10:41:36 25 Q And can you just describe for the Court, briefly, what

Bowers - Direct/Kratka

1 chemical engineering covers.

2 **A** Chemical engineering is concerned with, if you will, the
3 chemistry -- I hate to use the same word. But what goes on
4 inside the pipes in a refinery or chemical plant. We determine
5 how much of what constituent and component is supposed to be
6 there and not supposed to be there.

7 **Q** And your -- and in your career work, you stated that you
8 actually practice as a process engineer. How is that -- how
9 does that differ, if at all?

10 **A** Well, a process engineer is, if you will, a subpart of the
11 general field of chemical engineering. It's like a thoracic
12 surgeon and a surgeon. It's related specifically to calculating
13 the flow rates, pressures, and temperatures inside the pipes of
14 a process unit -- a facility that makes something.

15 **Q** So is chemical engineering focused on a specific real world
16 situation?

17 **A** It is.

18 **Q** And did you take any post-graduate courses in engineering
19 or related fields?

20 **A** Yes, sir, I did.

21 **Q** And what post-graduate courses did you take?

22 **A** They were advanced courses in heat transfer, momentum
23 transfer, and mass transfer.

24 **Q** And are those courses related to -- have any relation to
25 the operation of chemical plants or refineries?

Bowers - Direct/Kratka

1 **A** Yes, sir. In these -- in these courses you're taught
2 advanced techniques, post-graduate level, of calculating
3 chemical reactions, viscosities, pressure drop, the rate of flow
4 through a membrane.

10:43:14 5 **Q** And after completing your education, did you work as an
6 engineer?

7 **A** Yes, sir.

8 **Q** Your CV says, on page 1, that you have over -- I believe
9 it's on page 1, yes -- that you have over 50 years of experience
10:43:31 10 in the hydrocarbons industries --

11 **A** Yes, sir.

12 **Q** -- is that correct?

13 **A** Yes, sir.

14 **Q** And what did the hydrocarbons industries include?

10:43:37 15 **A** Hydrocarbons industries includes everything from expiration
16 for hydrocarbons, liquid hydrocarbons, generally, liquid or
17 gas -- it's natural gas, oil. I have some experience with coal,
18 exploration for it, processing and I guess that's about it.

19 **Q** Does it cover the refining of those?

10:43:57 20 **A** Oh, yes, sir. That's one of the core subjects there.

21 **Q** Okay.

22 **A** There are more chemical engineers employed in refining than
23 in any other area.

24 **Q** And you co-wrote a text book on petroleum refining?

10:44:11 25 **A** I did.

Bowers - Direct/Kratka

1 Q When was that published?

2 A I don't know. Let me think. Several years ago. Published
3 in March of 1920, it was published on a CD ROM.

4 Q In March of?

10:44:22 5 THE COURT: 1920?

6 BY MR. KRATKA:

7 Q 1920, maybe that was --

8 A No. No. March of 2000. I'm not that old, not that old.

9 Q And who was it published by?

10:44:31 10 A It was published by the American Institute of Chemical
11 Engineers.

12 Q And who was the target audience of this textbook?

13 A It was chemical engineers that were working in the
14 hydrocarbons industry. And also, non-engineers would learn a
10:44:47 15 lot from it, as well.

16 Q And --

17 THE COURT: Some light reading?

18 THE WITNESS: Oh yes, sir. It had some history of the
19 industry and, you know, pictures and --

10:44:54 20 THE COURT: History book, too, huh?

21 THE WITNESS: Yes, sir.

22 BY MR. KRATKA:

23 Q Was it -- was it also about the actual process of petroleum
24 refining?

10:45:01 25 A Yes, sir. It described in general terms, in layman's

Bowers - Direct/Kratka

1 language, if you will, what goes on in each of the process units
2 in a refinery.

3 Q Okay. And now, are you currently retired as a practicing
4 engineer?

10:45:12 5 A Well, I try to be. Yes, sir.

6 Q And since when was your putative retirement?

7 A Oh, goodness. I'm trying to remember. It's been five or
8 six years now. Time passes when you get old.

9 Q And have you done any consulting work since you retired?

10:45:31 10 A Yes, sir, I have.

11 Q And has any of your consulting work been for refineries?

12 A No, sir. It's been mostly against refineries. Well, I
13 take that back. There's some for refineries, yes. A small
14 amount. A small amount of consulting for refineries.

10:45:45 15 Q And have you done any consulting work on emission or safety
16 issues at refineries or chemical plants?

17 A I have.

18 Q And do you do anything to keep current with developments in
19 the hydrocarbons industry since your retirement?

10:45:59 20 A Yes, sir. I read, extensively, the literature of the
21 field.

22 Q And have you been a member of any --

23 MR. KRATKA: Strike that.

24 BY MR. KRATKA:

10:46:09 25 Q When you were a practicing engineer, did you hold an

Bowers - Direct/Kratka

1 engineering certificate?

2 **A** No, sir, I did not. I elected not to become a registered
3 engineering for liability reasons.

4 **Q** Did you -- were you a member of any professional
5 engineering organizations?

10:46:22

6 **A** Yes, sir, I was.

7 **Q** Can you describe which ones?

8 **A** Well, I was active in the American Institute of Chemical
9 Engineers on both a national level and a local level. The
10 Houston chapter was, by far, the largest in the world.

10:46:36

11 **Q** Were you also a member of the Project Management Institute?

12 **A** Yes, sir. I was one of the early adopters of that
13 technology, that body of knowledge.

14 **Q** And could you describe what the Project Management
15 Institute is?

10:46:51

16 **A** The PMI, as it's known, was formed to formalize and provide
17 a curriculum, if you will, of what are the basic skills that a
18 project manager should hold and be knowledgeable in. This
19 includes budgeting, scheduling, personnel, contract matters,
20 negotiation. The whole field of -- and it wasn't specific to
21 refining. It covered all industries, like software development.
22 It was the basic fundamental techniques of being a project
23 manager.

10:47:13

24 **Q** Okay. And before going into more detail on your specific
25 experience within the hydrocarbons industry, I want to just

10:47:29

Bowers - Direct/Kratka

1 first ask you a few very basic questions to sketch out the
2 general subject matter area of your opinions in this case so
3 that the court -- so that the Court can assess the relevance of
4 your work experience to what you've done here.

10:47:46 5 **A** May I add something, sir?

6 **Q** No. I'll -- I'll get -- I'll cover that.

7 **A** This goes back to a further -- an earlier question I didn't
8 answer correctly.

9 **Q** Which question was it that you didn't --

10:47:55 10 **A** Did I work for refineries? And I think I stated, no, I
11 worked against them; and that's not true.

12 **Q** Can you give a --

13 **A** I -- I worked as an expert witness in a legal action that
14 was against something that happened in the refinery. So I
10:48:11 15 focused on the facts and not the company.

16 **Q** So you did not consider yourself to be in an adverse
17 position to the refinery?

18 **A** No, sir. No, sir.

19 **Q** Okay. Thank you for clarifying.

10:48:23 20 Now, the Plaintiffs for this case hired you to
21 evaluate emission events that have occurred at the Baytown
22 Complex, correct?

23 **A** Correct.

24 **Q** And as an engineer, how would you describe your
10:48:35 25 understanding of what an emission event is?

Bowers - Voir Dire/Nichols

1 **A** An emission event as -- you know, the law defines it; but I
2 look at it as something that's not supposed to be there, that
3 got loose. Put it in layman's language, it escaped.

4 **Q** Something -- you mean something that --

10:48:51 5 **A** Something that was harmful in one way or another led to the
6 pollution called smog. It led to harm to people, the quality of
7 life.

8 MR. NICHOLS: Judge --

9 THE COURT: Yes, sir.

10:49:02 10 MR. NICHOLS: -- may I take the witness on voir dire?

11 THE COURT: Go on.

12 VOIR DIRE EXAMINATION

13 BY MR. NICHOLS:

14 **Q** Mr. Bowers, you are not a toxicologist, correct?

10:49:11 15 **A** That's correct, Mr. Nichols.

16 **Q** You are not an air dispersion modeler, correct?

17 **A** Correct.

18 **Q** And so with respect to your views of what is or is not
19 harmful, you are not an expert here to present testimony about
10:49:31 20 whether particular emission events involved in this case caused
21 any harm to human health and the environment, correct? That's
22 not your --

23 **A** That's a long question. Could you shorten it, please?

24 **Q** Sure.

10:49:43 25 Your area of expertise is not in the area of

Bowers - Direct/Kratka

1 whether particular amounts of emissions caused harm to human
2 health or environment, correct?

3 MR. KRATKA: Your Honor, we would agree that
4 Mr. Bowers is not being put forward as a toxicologist or a
10:49:58 5 medical expert to talk about health effects of particular
6 pollutants. That's correct.

7 MR. NICHOLS: Well, then I would move to strike
8 whatever testimony he just gave about emissions being harmful.
9 That was what caused me to get to my feet.

10:50:10 10 THE COURT: All right. It's sustained to that extent.
11 I understand.

12 MR. NICHOLS: Great.

13 DIRECT EXAMINATION

14 (continued)

10:50:14 15 BY MR. KRATKA:

16 Q So in other words, you're saying an emission event involves
17 the escape of liquids or gasses contained -- that should be
18 contained at a refinery or chemical plant?

19 A Correct.

10:50:23 20 Q And in the industry or even in proper parlance, are
21 emission events sometimes referred to as "upsets"?

22 A An upset can cause an emission. An upset in and of itself
23 doesn't.

24 Q So is the upset the act of something going wrong?

10:50:45 25 A Yes.

Bowers - Direct/Kratka

1 Q And then the emission event would be any actual air
2 emissions associated with the upset?

3 A Correct.

10:50:55 4 Q Okay. And again, without getting into what your actual
5 opinions are yet, were you asked to evaluate the causes of
6 emission events at the Baytown Complex?

7 A Yes.

8 Q And were you also asked to evaluate whether emission events
9 at the Baytown Complex could have been prevented?

10:51:08 10 A Yes.

11 Q And were you also asked to calculate an estimate of the
12 cost of any such measures that could have been taken to prevent
13 emission events at the Baytown Complex?

14 A Yes.

10:51:18 15 Q Okay. So with that understanding of the scope of your
16 opinion, let me ask you some questions now about your -- your
17 work experience.

18 Have you had -- right now I'm going to use the --
19 in this couple of questions, I'm going to use the term "hands-on
10:51:37 20 experience." And by that, I mean did you actually perform tasks
21 yourself as opposed to supervising someone else's performance of
22 them.

23 Do you understand that?

24 A Yes, sir.

10:51:46 25 Q Have you had hands-on experience in actually running and

Bowers - Direct/Kratka

1 operating process units that are used in oil refineries and
2 petrochemical plants?

3 **A** I have.

4 **Q** And is your hands-on experience limited to just one or two
10:52:01 5 types of refining units or is it broader than that?

6 **A** It's one or two units, sir.

7 **Q** Just one or two units?

8 **A** Yes.

9 **Q** Well, how many years of this type of hands-on experience
10:52:10 10 have you had working at oil refineries?

11 **A** I'd say, in total, less than two; less than 24 months, but
12 more than 12. And that's so broad, I -- I really don't --

13 THE COURT: I didn't understand the question, please.

14 BY MR. KRATKA:

10:52:24 15 **Q** Okay. How many years have you worked as a -- doing
16 hands-on --

17 **A** Doing --

18 THE COURT: Hold it. Hold it.

19 BY MR. KRATKA:

10:52:31 20 **Q** For how long did you have hands-on experience working on
21 process units at a refinery?

22 THE COURT: You mean before -- while he was in active
23 practice? You're including after retirement but still giving
24 opinions.

10:52:45 25 MR. KRATKA: Including his actual career.

Bowers - Direct/Kratka

1 THE COURT: Okay.

2 THE WITNESS: I'm going to limit my time estimate to
3 actual when I would tweak the knobs or direct an operator to
4 turn the knob. Early in my career at Texaco, I would direct
10:52:59 5 operators to turn knobs as we were performing tests on them.
6 Later in my career, I was responsible for development of new
7 technology, and I would physically turn the knobs --

8 BY MR. KRATKA:

9 Q I see.

10:53:10 10 A -- under the supervision of a refiner's operators, with
11 their permission.

12 Q Okay. And so this -- this Texaco refinery, where was that
13 located?

14 A This is Port Arthur, Texas.

10:53:22 15 Q And overall, how long did you work at the Texaco
16 Port Arthur refinery?

17 A A little over seven years.

18 Q That was at -- towards the beginning of your career?

19 A Yes, sir.

10:53:31 20 Q And did your work at Texaco involve environmental
21 compliance?

22 A Early in the -- yes, it did.

23 Q And that work sometimes involved hands-on experience at
24 particular units?

10:53:41 25 A Yes, it did.

Bowers - Direct/Kratka

1 Q And generally, what other types of work did you do during
2 those seven years at the Texaco Port Arthur refinery?

3 A One thing that was interesting was to put together a
4 comprehensive piping diagram in the refinery to show where
10:53:58 5 things went and didn't go, because there was only knowledge in
6 the old pumpers as they call it. They didn't have it. And it
7 was eye-opening.

8 And I also, for instance, managed the quality
9 control for military jet fuel, JP-4 and JP-5 and airline
10:54:20 10 industry standard, Jet A, they called it.

11 Q During your seven years at the Port Arthur refinery, did
12 your work take you to all parts of the refinery?

13 A Yes, it did.

14 Q So do you -- did you have a familiarity with all the
10:54:39 15 various process and operating units at that refinery?

16 A Yes. I had familiarity and, in many cases, hands-on
17 operation experience, supervisory experience for more units than
18 exist at Exxon, in total.

19 Q So you had both -- you're saying you had both hands-on and
10:54:57 20 supervisory experience --

21 A Yes.

22 Q -- at many units?

23 A Yes. I was involved in making specialty products, if you
24 will, many for the Air Force and NASA.

10:55:07 25 Q And have you had experience in performing maintenance at

Bowers - Direct/Kratka

1 oil refineries and chemical plants?

2 **A** I didn't turn wrenches. I didn't do it, but I observed
3 what was going on. As a process engineer, it was kind of -- I
4 owned the unit.

10:55:22 5 **Q** To use Mr. Kovacs's phrase, you felt you "owned" those
6 units?

7 **A** Yes, sir.

8 **Q** Okay. And at which facilities did you gain experience in
9 what goes into maintenance at refineries and chemical plants?

10:55:39 10 **A** I'd spend a lot of time -- a lot of time in the processes
11 used in lube oil manufacturing, some of which were low
12 temperature, some of which were high-pressure hydrogenation, and
13 a lot of time in our hydrocracker, which was a somewhat
14 problematic unit.

10:55:57 15 **Q** And a hydrocracker is one of the units that was discussed
16 yesterday on the virtual plant tour by Mr. Kovacs?

17 **A** Yes, it was.

18 **Q** Have you ever designed or consulted on designing a
19 preventive maintenance program on any part of a refinery or
10:56:13 20 chemical plant?

21 **A** Yes. I was a part of the team that worked on the
22 hydrocracker.

23 **Q** That was at the Texaco unit?

24 **A** Yes, sir.

10:56:18 25 **Q** Did you also work on maintenance issues at the lube oil

Bowers - Direct/Kratka

1 unit for Texaco?

2 **A** Yes, sir. They were extremely complicated, mechanically.

3 **Q** And you worked on maintenance for those units?

4 **A** Yes, sir.

10:56:31 5 **Q** And did you ever work on -- did you -- you worked at the
6 Chevron Richmond refinery in California, correct?

7 **A** I worked there as an employee of Bechtel and a consultant
8 to Chevron at the same time, yes.

9 **Q** And during that consulting experience at Chevron Richmond,
10:56:48 10 did you have any involvement in designing preventive maintenance
11 programs for any part of that plant?

12 **A** Yes. For a hydrocracking complex that included 17 new
13 units.

14 **Q** And did you do -- did you also work at the Shell Martinez
10:57:02 15 plant in California?

16 **A** Yes, I did.

17 **Q** And at the Shell Martinez refinery, did you -- well, did
18 you have any involvement in preventive maintenance at that
19 facility?

10:57:11 20 **A** No, not that facility.

21 **Q** Okay. Have you ever developed operating plans for any part
22 of a refinery or chemical plant?

23 **A** Yes, sir.

24 **Q** Did you do any -- develop operating plans while you were at
10:57:23 25 the Texas Port Arthur facility?

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1 **A** I did.

2 **Q** Do you recall which facilities you developed operating
3 plans for?

10:57:35

4 **A** It was, again, for the hydrocracker to which I referred
5 earlier and associated diesel hydrotreater. They're both new
6 units which I helped design.

7 **Q** And did you -- did you -- you also worked at a -- or
8 consulted at a plant in Venezuela?

9 **A** Yes, I did.

10:57:47

10 **Q** What type of plant was that?

11 **A** It was a conventional fuels refinery that was looking -- or
12 evaluating, installing a lube oil manufacturing complex for
13 hydrocracking and associated facilities.

14 **Q** And was developing operating plans any part of that work?

10:58:05

15 **A** Yes, sir. It was estimating how many people it would take
16 to operate it and maintain it.

17 **Q** And while you worked for Ethyl Corporation, did you ever
18 get involved in preventive -- I'm sorry, developing operating
19 plans for any part of the facility?

10:58:21

20 **A** It -- it -- with Ethyl it was more reviewing operating
21 plans there to improve them.

22 **Q** So you reviewed and improved operating plans for -- what
23 kind of facility was that?

24 **A** Well, they make tetraethyl lead, and the ones for --

10:58:37

25 tetraethyl -- TEL, tetraethyl lead. That's lead antiknock

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1 compound. That's the Ethyl Corporation. And also in the vinyl
2 chloride manufacturing facility.

3 **Q** And those are both chemical plants?

4 **A** Yes, sir.

10:58:49 5 **Q** And in your work at the -- you worked at the Ashland
6 Chemical facility as well, correct?

7 **A** That's in Louisiana, Plaquemines.

8 **Q** And you -- did you develop operating plans for the furnaces
9 at that plant?

10:59:03 10 **A** I was more in the -- I was the project manager associated
11 with the -- I was responsible for a major revamp and expansion
12 of that large reformer.

13 **Q** Okay. And have you ever served in a managerial capacity at
14 a refinery or chemical plant?

10:59:18 15 THE COURT: Any division or the whole plant?

16 BY MR. KRATKA:

17 **Q** Of any division?

18 **A** I was the manager for a project to develop a new technology
19 for desulfurizing diesel fuel.

10:59:32 20 **Q** Where was that?

21 **A** That was in Valero's refinery in Krotz Springs, Louisiana.

22 **Q** And do you know what the term "process design" means in the
23 context of oil refineries and chemical plants?

24 **A** It has many meanings, but could you be more specific.

10:59:47 25 **Q** Well, let me ask you to define what -- if you would just

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1 give the Court a general idea of what -- what is involved in
2 process design.

3 **A** Process design is calculating and presenting, in legible
4 format, the rules of how to accomplish something. To turn a
5 crude oil into jet fuel, there's calculating all the process
6 conditions and treatments necessary to accomplish that.

7 **Q** For a particular unit that's --

8 **A** For a particular unit.

9 **Q** Okay. And what level of detail is entailed in performing
10 the process design of units or equipment for a refinery or
11 chemical plant?

12 **A** The level of detail goes down to, perhaps, one-thousandth
13 of one percent accuracy in a material balance, calculating what
14 goes in and what comes out in the various streams, calculating
15 the trace contaminants that would be in a byproduct or waste
16 stream, as well as calculating the quality of the products that
17 you were intending to produce.

18 **Q** And does process design for refineries and chemical plants
19 involve elements relating to the containment of liquids or
20 gasses?

21 **A** Yes, it does.

22 **Q** Is loss of containment -- and I think you testified earlier
23 that loss of containment is what happens during an emission
24 event?

25 **A** Yes.

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1 Q So does process design include designing units or equipment
2 to avoid emission events?

3 A Correct.

11:01:32

4 Q And can you just explain for the Court why it is that
5 process design at such facilities does entail ensuring the
6 containment of liquids and gasses?

11:02:00

7 A A refinery, by design and by nature, processes huge amounts
8 of hydrocarbons, most of which are highly flammable, easy to
9 burn or they're toxic, well known as being fatal, lethal in some
10 cases.

11 MR. NICHOLS: Your Honor, again, I'm going to object
12 to this witness wandering off into this area which we've already
13 established through voir dire he's not qualified to testify.

14 THE COURT: Overruled. We'll go question by question.

11:02:11

15 THE WITNESS: For instance, hydrogen sulfide is
16 classified as a lethal gas.

17 BY MR. KRATKA:

11:02:21

18 Q Well, aside from the particular -- getting to the
19 particular elements, your testimony is that there's a reason
20 that these gasses must be -- and liquids must be contained.

21 A Yes.

22 THE COURT: Yes or no? That was a yes?

23 THE WITNESS: Yes.

11:02:30

24 THE COURT: Now we got to go down step by step because
25 I understand the objection.

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1 Go on.

2 BY MR. KRATKA:

3 Q Now, Mr. Bowers, have you yourself ever performed process
4 design work for a refinery or a chemical plant?

11:02:38 5 A Yes.

6 Q And what are some of the types of process units that you
7 yourself have performed process design work for?

8 A If I may just go down the list.

9 Q Sure.

11:02:48 10 A Crude distillation units, desalting units which remove the
11 salt and water from the crude oil, and then it would be
12 catalytic cracking units, catalytic hydro-processing, catalytic
13 hydrocracking, delayed coking, thermal cracking, alkylation,
14 caustic treating --

11:03:15 15 THE COURT: Caustic what?

16 THE WITNESS: Treating.

17 THE COURT: Okay.

18 THE WITNESS: -- acid treating, clay treating, solvent
19 extraction, and asphalt manufacture.

11:03:30 20 BY MR. KRATKA:

21 Q You may have mentioned this: Have you ever done design
22 work for propylene fractionation?

23 A Yes.

24 Q And have you actually ever done process design for more
11:03:42 25 than just a particular unit but for an entire plant?

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1 **A** Yes.

2 **Q** Can you describe which plants those are for?

3 **A** Well, there have been several, but let me just mention one
4 significant one that's in Richmond, California, for Chevron. It
5 was the Richmond lube oil project as it was called. I earlier
6 mentioned it had 17 process units, major process units. Some of
7 the world's largest high-pressure hydrocrackers at approximately
8 3300 pounds-per-square-inch pressure. And I was responsible for
9 the process design for all that facility.

10 **Q** And did you also do process design for a chemical -- an
11 olefins plant in Thailand?

12 **A** Yes.

13 **Q** And did you do process design for a BFGoodrich ethylene
14 plant?

15 **A** Yes.

16 **Q** Now, let me ask you a few questions about your familiarity
17 with certain specific types of equipment that are found at the
18 Baytown plant and have been named and identified by Exxon in
19 emission events that are at issue in this case.

20 Are you familiar with the design and operation of
21 refinery and chemical plant flares?

22 **A** Yes.

23 **Q** Are you familiar with the design and operation and
24 maintenance needs of sulfur recovery units?

25 **A** I am.

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1 Q And can you just for the Court -- and maybe we went through
2 this yesterday. But so very briefly describe the purpose of a
3 sulfur recovery unit at a refinery.

4 A In a refinery situation, the SRU --

11:05:14

5 THE COURT: What's an SRU?

6 THE WITNESS: SRU is a sulfur recovery unit, your
7 Honor. I apologize.

8 In that unit, you burn part of the H₂S to SO₂.

9 BY MR. KRATKA:

11:05:27

10 Q H₂S is hydrogen sulfide?

11 A Hydrogen sulfide. And then the SO₂ reacts with the
12 remainder of the hydrogen sulfide to form elemental sulfur and
13 water or steam because of high temperature.

14 Q And SO₂ is sulfur dioxide?

11:05:44

15 A Sulfur dioxide. And the resulting effluence is liquid
16 sulfur and water vapor. It will have trace amounts of hydrogen
17 sulfide remaining and that is further recovered in a tail gas
18 treating unit.

19 Q And the point is to remove the sulfur from the finished
20 product?

11:06:02

21 A The point is to take the hydrogen sulfide and turn it
22 completely into a salable product, sulfur.

23 Q And are you familiar with the design, operation, and
24 maintenance needs of oil and chemical storage tanks?

11:06:16

25 A I am.

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1 Q Are you familiar with the design, operation, and
2 maintenance needs of compressors?

3 A I am.

4 Q And again, just briefly, what is a compressor?

11:06:25

5 A A compressor is a mechanical device analogous to a tire
6 pump, which many people used to use. It takes a gas at a low
7 pressure and boosts it to a higher pressure by squeezing it.

8 Q And I imagine compressors at refineries are somewhat bigger
9 than tire pumps?

11:06:44

10 A Yes, sir.

11 Q Are there different types of compressors found at
12 refineries and chemical plants?

13 A There are.

14 Q Can you, just briefly, describe the types?

11:06:53

15 A The two main types of compressors would be centrifugal,
16 which are rotating and use the centrifugal force in compressing
17 the molecules. The other is reciprocating compressor, which is
18 a piston inside a cylinder. Those are the two main types.

19 Q And are you familiar with the operation, design, and

11:07:12

20 maintenance needs of both types of compressors?

21 A I am.

22 Q And why are compressors used at refineries and chemical
23 plants? What overall goal do they serve?

24 A Compressors -- excuse me. They're used to take a gas at a
25 low or intermediate pressure, lower, and raise it to a

11:07:30

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1 higher pressure for a subsequent use or reuse.

2 **Q** And are you familiar with the design and maintenance needs
3 of pipes and piping at refineries and chemical plants?

4 **A** Yes, I am.

11:07:50 5 **Q** And are you familiar with the types of seals used at
6 refineries and chemical plants?

7 **A** In a general nature. I'm not a metallurgist.

8 **Q** Are you familiar with the maintenance needs of seals?

9 **A** Yes.

11:08:03 10 **Q** And are you familiar with the types of valves used at
11 refineries and chemical plants?

12 **A** In a general nature, valves can be extremely specific for
13 the service.

14 **Q** But in general, are you familiar with the maintenance needs
11:08:16 15 of valves at these facilities?

16 **A** Yes, sir.

17 **Q** Can pipes, seals and valves be subject to leaks?

18 **A** Yes.

19 **Q** And do you have experience in leak detection or leak
11:08:27 20 prevention?

21 **A** It is somewhat dated now. We didn't have laser detectors.
22 But yes, we had sniffers.

23 **Q** What is a sniffer?

24 **A** It's a device that --

11:08:39 25 THE COURT: It's not a person that goes around, right?

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1 THE WITNESS: Well, that was the early days. Then we
2 went to modern technology which was a portable device which
3 would -- you'd just squeeze a rubber bulb and it would suck in
4 some of the vapor and it would give an indicator of whether
5 there were hydrocarbons there. It was used early to detect was
6 it safe to go into the environment. And then they became more
7 specific.

11:08:56

8 BY MR. KRATKA:

9 Q Do you have a general familiarity with the more modern
10 laser techniques?

11:09:06

11 A Yes, sir, just a general familiarity.

12 Q And do you have experience in estimating or calculating the
13 amount of pollutants released from a gas leak?

14 A Yes.

11:09:22

15 Q Are you familiar with the types of electrical components
16 used at refineries and chemical plants?

17 A Of a general nature.

18 Q And are you familiar with their maintenance needs?

19 A Somewhat, generally.

11:09:32

20 Q Are you familiar with the types of instrumentation used at
21 refineries and chemical plants?

22 A Yes.

23 Q And are you familiar with their maintenance needs?

24 A In a general nature, not specific to a given instrument.

11:09:44

25 Q Now, have you ever been involved in calculating the capital

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1 costs of equipment or even of entire units at a refinery or
2 chemical plant?

3 **A** I have.

4 **Q** Let me break that up into two pieces. Have you ever been
5 involved in calculating the capital costs of particular
6 equipment at a refinery or chemical plant?

7 **A** I have.

8 **Q** And have you been involved in calculating the capital costs
9 of entire units?

10 **A** Yes.

11 **Q** Okay. And have you ever been involved in creating a budget
12 for the capital costs of equipment at refineries or chemical
13 plants?

14 **A** I have.

15 **Q** Have you ever been involved in calculating the operating
16 and maintenance costs at refineries and chemical plants?

17 **A** I have.

18 **Q** And have you ever been involved in creating budgets for
19 operation and maintenance costs at refineries or chemical
20 plants?

21 **A** I have.

22 **Q** Now, you mentioned earlier that you had done some work
23 designing an olefins plant. Did your work on that project
24 involve calculation of capital costs?

25 **A** Yes.

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1 Q And how did you go about calculating the anticipated
2 capital cost of that project?

3 A I worked from what we call historical costs, what it's
4 taken in the past to accomplish this at a given location. And
11:11:02 5 then you determine the difference in construction costs between
6 the reference location and the proposed location. And then you
7 adjust for the size and complexity of the two units. I mean,
8 there are different olefins plants, like gas feed and liquid
9 feed.

11:11:20 10 Q And did these calculations also involve determining what
11 the operating and maintenance costs would be for that facility?

12 A Yes.

13 Q And how did you go about calculating the operation and
14 maintenance costs for that facility?

11:11:34 15 A The operating costs and maintenance costs, first, we use
16 historical numbers from the old units; evaluated the labor costs
17 in the new area if it was a specific unit involved. Oftentimes,
18 it was a prospective design for some -- a developer, if you
19 will, a refinery and we worked operating and maintenance costs
11:12:01 20 as a percent of the capital costs.

21 Q And did your client rely on your cost estimates for both
22 capital costs and operation and maintenance costs in this
23 project?

24 A Yes, sir. Often their banks that were financing the unit
11:12:17 25 demanded an outside opinion such as ours.

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1 Q And have you done similar work for other facilities during
2 your career?

3 A Yes, sir, for numerous.

4 Q And was it the same type of work that you just described?

11:12:27 5 A Yes, sir.

6 Q And for each of these projects, your calculations of
7 capital costs, operation and maintenance costs were relied on by
8 your clients?

9 A Yes, sir. A significant one is for the nation of Algeria.
11:12:42 10 I was responsible for developing and calculating the entire
11 hydrocarbon development plan from the beginning of 1979 through
12 2010 and the number of refineries that would be needed, the
13 types of refineries, LNG plants, pipelines.

14 THE COURT: LNG?

11:13:06 15 THE WITNESS: Liquified natural gas, sir.

16 So it was -- the entire development plan was
17 programmed year by year with both capital costs and maintenance
18 and operating costs, both in terms of local dollars and hard
19 currencies. And the -- and which was important to -- in that
11:13:24 20 location to say how much hard foreign currency would they need.
21 And that project was non-recourse financed.

22 BY MR. KRATKA:

23 Q And what is non-recoursed financing?

24 A It means the banks look only to the rev -- the revenue
11:13:36 25 generated by the project and not to the owners or anybody else.

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1 THE COURT: Who made the loan?

2 THE WITNESS: It was a consortium of European banks.

3 BY MR. KRATKA:

4 Q And you also testified earlier about your work on a
11:13:52 5 feasibility study for the lube oil production facility in
6 Venezuela?

7 A Yes, sir.

8 Q Did that study involve any economic analysis?

9 A Yes, sir, it did.

11:13:59 10 Q Did it involve calculation of capital costs or O&M costs?

11 A Yes, sir.

12 Q Both of them?

13 A Both.

14 Q And in your work at the Texaco Port Arthur refinery,
11:14:08 15 towards the beginning of your career, did you have any
16 involvement there in calculating or budgeting O&M costs,
17 operations and maintenance costs?

18 A At a more cursory level. It was, I call it, preliminary
19 capital costs and operating costs, budget-type stuff, initial
11:14:22 20 budget.

21 Q So you were involved in creating initial budgets there?

22 A Yes, sir. How many operators, how many -- what was -- what
23 was the maintenance cost going to be, the operating cost,
24 depending on the source of fuel and electricity.

11:14:35 25 Q So you were down there in the weeds with numbers of

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1 workers, their labor costs, particular types of equipment and
2 their costs?

3 **A** Yes, sir.

11:14:51

4 **Q** And before this case, had you ever performed any economic
5 analysis for any part of Exxon's Baytown facility?

6 **A** Years ago, for the Department of Energy, I evaluated their
7 coal liquefaction. And it was a hydrogenated liquefaction
8 plant. And this was for the Department of Energy project under
9 Jimmy Carter, Project Independence.

11:15:11

10 **Q** And you mentioned earlier that you had been hired as an
11 expert witness in connection with lawsuits. Have you ever been
12 hired to be an expert witness on the specific subject of
13 emission events at a refinery or chemical plant?

14 **A** Yes.

11:15:27

15 **Q** Did you work on the Shell Deer Park case that's been
16 referred to earlier in this trial?

17 **A** I did.

18 THE COURT: Which one was that? Was the agreed order?
19 The agreed order?

11:15:37

20 MR. KRATKA: Yes, Environment Texas and Sierra Club
21 versus Shell Oil Company.

22 THE WITNESS: Yes.

23 BY MR. KRATKA:

11:15:46

24 **Q** And in that case, did you testify or did you just perform
25 consulting work?

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1 **A** I performed consulting work.

2 **Q** And for that case, did you review documents from Shell?

3 **A** Yes, sir.

4 **Q** And were -- did you review documents about the causes of
11:15:57 5 emission events?

6 **A** I did.

7 **Q** And did you review documents or consult analyses about
8 measures to prevent emission events?

9 **A** I did.

11:16:04 10 **Q** And did you also serve as an expert witness in the Chevron
11 Phillips Chemical case brought by Sierra Club and Environment
12 Texas?

13 **A** Yes, I did.

14 **Q** And again, in that case, did you -- did you just do
11:16:18 15 consulting work?

16 **A** Yes, sir, just consulting.

17 **Q** And again, did you review documents regarding emission
18 events?

19 **A** Yes, I did.

11:16:26 20 **Q** And you consulted regarding the prevention of emission
21 events at that facility?

22 **A** Yes, sir.

23 **Q** Have you ever testified in court on the causes of an
24 emission event at a refinery?

11:16:37 25 **A** I have.

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1 Q And was that the BP Texas City case you mentioned earlier?

2 A Yes, sir.

3 Q Did the judge in that case find that you were qualified to
4 testify as an expert witness on that subject?

11:16:48 5 A He did.

6 Q And prior to this case, have you ever been retained as an
7 expert witness to calculate capital or operating and maintenance
8 costs of an entire refinery or chemical plant?

9 A I have.

11:17:02 10 Q And can you describe which -- what -- what those -- where
11 those cases were and what they were about?

12 A I was retained by Shell, through my employer Bechtel, to
13 calculate the profitability of the refineries that they had in
14 Los Angeles. It's -- generally, it's lumped together as the
11:17:23 15 El Segundo refinery but there are two locations separated by
16 Sun. And my -- my task was to take the economic value of the
17 existing plant and locate it in a new single plant and then
18 estimate the capital and operating costs of that new facility.

19 Q And did the -- was that in two separate cases?

11:17:51 20 A Yes, sir. It was done twice.

21 Q So you testified twice?

22 A Yes.

23 Q And did the judge or judges in those two cases find that
24 you were qualified to testify on an -- as an expert witness on
11:18:00 25 that subject?

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1 **A** Yes.

2 **Q** Now, let me ask you some questions about the types of
3 evidence you looked at in order to arrive at your opinion for
4 this case, specifically, the Exxon Baytown-related information.

11:18:19

5 First of all, are you familiar with the term
6 "reportable emission event"?

7 **A** I am.

8 **Q** And are you familiar with the State of Texas Electronic
9 Environmental Reporting System, whose acronym is STEERS?

11:18:34

10 **A** Yes.

11 **Q** And did you -- in working on this case, have you reviewed
12 STEERS reports from the Exxon -- from Exxon relating to
13 reportable emission events at the Baytown Complex?

14 **A** Yes.

11:18:45

15 **Q** And do these STEERS reports include Exxon's own
16 descriptions of the cause of the event and corrective actions
17 taken?

18 **A** Yes.

19 **Q** And you reviewed those descriptions?

11:18:54

20 **A** Yes.

21 **Q** Did you also review TCEQ investigation reports regarding
22 these reportable emission events at the Baytown Complex?

23 **A** Yes.

24 **Q** And did the TCEQ investigation reports, as well, contain
25 information about causes of emission events and corrective

11:19:13

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1 actions?

2 **A** Yes.

3 **Q** And you reviewed those investigation reports?

4 **A** Yes.

11:19:19 5 **Q** Did you review any other documents produced by Exxon in
6 this case that contain Exxon's own analysis of reportable
7 emission events?

8 **A** I believe there were a couple of the root cause analysis
9 included in the documents that I was furnished.

11:19:39 10 **Q** And did the reportable emission events that you analyzed
11 all fall within the time period of October, 2005, through
12 September of 2013?

13 **A** Yes.

14 **Q** Now, another set of materials I want to ask you about has
11:19:53 15 to do with the non-reportable emission events or recordable
16 emission events.

17 **A** That's recordable with a "C"?

18 **Q** Yes.

19 **A** Okay.

11:20:01 20 **Q** And just so we're all on the same page, although we've done
21 it many times, the recordable emission events are the ones not
22 publicly reported under the STEERS system.

23 Do you understand that?

24 **A** I understand that.

11:20:15 25 **Q** And did you review spreadsheets containing information

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1 about non-recordable emission events that occur at the Baytown
2 Complex?

3 **A** Yes.

11:20:28

4 **Q** And did those spreadsheets also contain information about
5 causes, locations, and corrective actions of each event?

6 **A** Yes.

7 **Q** And you reviewed -- did you review spreadsheets of
8 non-recordable events for each of the three plants, the
9 refinery, chemical plant, and olefins plant?

11:20:42

10 **A** Yes.

11 **Q** And did the non-recordable events that you reviewed
12 information about also take place between October, 2005, and
13 September, 2013?

14 **A** Yes.

11:20:55

15 **Q** And did you also review -- are you familiar with the term
16 "deviation report"?

17 **A** Yes.

18 **Q** And those are -- those reports contain information on
19 compliance with Title V permits?

11:21:07

20 **A** Yes.

21 **Q** And did you review deviation reports for the Baytown
22 Complex that were submitted by Exxon to the TCEQ?

23 **A** I did.

11:21:21

24 **Q** And did the deviation reports you reviewed pertain to the
25 period of October, 2005, through 2013?

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1 **A** Yes.

2 **Q** Now, in addition to docket -- in addition to these
3 documents that related to specific emission events or
4 deviations, I want to ask you about more general information you
5 may have reviewed about -- in relation to this case.

11:21:40

6 Did you review any deposition testimony of Exxon
7 employees regarding maintenance programs at the Baytown Complex?

8 **A** Yes.

9 **Q** And did you review any operating manuals or guidelines for
10 specific units or types of equipment at the Baytown Complex?

11:21:56

11 **A** Yes.

12 **Q** And did you review annual summaries of maintenance budgets
13 and capital maintenance projects for the three plants at the
14 Baytown Complex?

11:22:10

15 **A** The budgets were for capital expenditures. Maintenance
16 included everything related to maintenance and then IRS
17 regulation capital expenditures.

18 **Q** And you reviewed both types of documents?

19 **A** Yes.

11:22:28

20 **Q** Can you -- this may be difficult. Can you estimate
21 approximately how many pages of documents Plaintiffs' counsel
22 gave you to review in the case?

23 MR. KRATKA: Let the record reflect that the witness
24 is extending his arm.

11:22:50

25 THE WITNESS: Perhaps 20,000.

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1 BY MR. KRATKA:

2 Q 20,000 pages? Do you know how much --

3 THE COURT: I'm aware of it. I got a bunch of them
4 right underneath the bench. He's got one on a small disk. I
5 got a lot of books here, too.

6 Go on.

7 BY MR. KRATKA:

8 Q Do you know how much time you spent reviewing these
9 documents in this case?

10 A The total to date is about 850 hours, maybe a little more.
11 I have to -- I haven't counted it all yet.

12 Q I'm sure we'll hear a final total.

13 A You'll get billed.

14 Q Yeah. In addition to reviewing documents, did you also
15 visit the Baytown Complex in person as part of the site
16 inspection arranged by the parties in this case?

17 A Yes. I participated in a very carefully scripted
18 three-hour tour.

19 Q All right. Well, how long -- you said it was a three-hour
20 walk-through?

21 A Yes.

22 Q And what parts of the complex did you inspect, if you
23 recall?

24 A I really don't recall completely because it was a -- we
25 went by the fluid coker, or flexicoker. We went into the

Bowers - Direct/Kratka

1 control room of that unit. And I may have to beg -- I don't
2 remember specifically.

3 **Q** Yeah. Yeah. It's been a couple of years.

4 **A** It's been a couple of years.

11:24:04 5 **Q** Did you review -- did you visit Booster Station 4, if you
6 recall?

7 **A** We did, we visited Booster Station 4.

8 **Q** And did we visit a flare unit?

9 **A** Yes, one of the flares.

11:24:15 10 **Q** And was any part of the walk-through at the chemical plant?

11 **A** We drove by the chemical plant.

12 **Q** And was the -- did you go -- was the olefins plant off
13 limits at that time?

14 **A** Olefins plant was -- we were not allowed because major
11:24:33 15 maintenance was ongoing. A turn-around they called it.

16 **Q** And have you asked Plaintiffs' counsel to try to include
17 particular parts of the complex on the inspection tour?

18 **A** I did.

19 **Q** And were you able to -- was your request based on documents
11:24:52 20 you had already reviewed for the case?

21 **A** It was.

22 **Q** Was it to -- so it was to follow up on questions or
23 concerns that you had developed from the review of documents?

24 **A** I wanted to see physically what -- with my own eyes so I
11:25:05 25 could make a better judgment and assessment of what was going

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1 on.

2 **Q** And was the olefins plant one of the areas that you wanted
3 to see with your own eyes?

4 **A** Yes.

11:25:15 5 **Q** And you were not granted access to that plant?

6 **A** No, sir.

7 **Q** Were you able to ask questions of Exxon employees during
8 the site visit?

9 **A** I was able -- allowed to ask questions to Exxon's counsel
11:25:29 10 who then asked questions.

11 **Q** Okay. And were you allowed to take pictures during the
12 site inspection?

13 **A** I was not. I, again, was able to ask Exxon's counsel to
14 have the pictures taken.

11:25:44 15 **Q** And the pictures that were taken were ultimately included
16 as an exhibit to or an attachment to your expert opinion in this
17 case?

18 **A** Yes.

19 **Q** All right. And we'll get to those. All right.

11:26:01 20 MR. KRATKA: At this point, your Honor, Plaintiffs
21 offer Mr. Bowers as an expert in refinery and chemical plant
22 operations, maintenance, design, and economic planning.

23 MR. NICHOLS: Your Honor, that is not the procedure
24 that's used. You don't prequalify. He asks questions --

11:26:17 25 THE COURT: In other words, you keep going until you

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1 hear an objection. Go ahead.

2 MR. KRATKA: That's fine.

3 THE COURT: I know some state courts, as you travel
4 around the country, you need to tender the witness. But in most
11:26:28 5 federal courts, you can just go ahead. Got his background; and
6 as long as you keep, I guess, his testimony within the
7 parameters, you can keep testifying.

8 MR. KRATKA: Fair enough.

9 THE WITNESS: May I ask for a potty break. I'm a
11:26:44 10 survivor of cancer, prostate cancer.

11 THE COURT: Absolutely. Absolutely.

12 Let me stop the clock. Okay. It's 11:27. We'll
13 see you back, ready to resume at 20 minutes to 12:00.

14 (Court recessed at 11:27 a.m.)

11:44:47 15 (Court resumed at 11:44 a.m.)

16 BY MR. KRATKA:

17 Q Mr. Bowers, so you mentioned earlier that you were asked to
18 determine or analyze the causes of emission events, why these
19 emission events have been happening.

11:45:24 20 Did you write reports summarizing the basis for
21 your opinions in this case?

22 A I did.

23 Q Let me show you, actually, if you could turn -- I think it
24 would be in the first notebook, 18, exhibits -- take a look at
11:45:39 25 Plaintiffs' Exhibit 427.

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1 Is that your initial report that was prepared in
2 this case?

3 **A** It appears to be, yes, sir.

4 **Q** And then Exhibit 428, is that the rebuttal report to the
11:46:00 5 expert report of Christopher Buehler that you prepared for this
6 case?

7 **A** Yes, sir.

8 **Q** And then, if you -- hang on one second, sir.

9 And then, if you would, look at Plaintiffs'
11:46:23 10 Exhibit 430. Is this the corrected version of the supplemental
11 expert report that you submitted just before trial?

12 **A** Yes, sir.

13 MR. KRATKA: Now, your Honor, there are -- you can see
14 there's a large number of exhibits to the supplemental report.

11:46:48 15 THE COURT: That's correct. It goes on, looks like,
16 for about two inches.

17 MR. KRATKA: Right. And so, to make it much easier to
18 pull out and look at a particular one, we've pulled them out
19 separately and that's the second notebook, 19, which will
11:47:02 20 have -- as I walk the witness through some of the exhibits, it
21 will be easier to find them in Notebook 19; and I'll -- so we
22 submitted them as separate exhibits.

23 THE COURT: Okay.

24 MR. NICHOLS: And your Honor, just for the record,
11:47:15 25 with respect to the --

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1 THE COURT: Not Exhibit 19, book 19.

2 MR. KRATKA: Yes. Yes, binder 19.

3 MR. NICHOLS: -- with respect to the expert reports,

4 our position is consistent with what we discussed before we

11:47:25 5 begin the trial which is that, as you know, we have a number of

6 objections to their expert opinions, they have a number of

7 objection to ours. We believe the Court can take all this

8 matter under advisement as it would in doing a Daubert

9 challenge.

11:47:42 10 And so, on that basis, on an equal footing, each
11 side, we are not objecting to the Court receiving these into the
12 record.

13 THE COURT: Is that agreed?

14 MR. KRATKA: Yes.

11:47:51 15 THE COURT: Okay, thank you.

16 MR. KRATKA: Thank you for clarifying that,

17 Mr. Nichols.

18 BY MR. KRATKA:

19 Q Now, let's look at what originally was Exhibit 3 to your
11:48:05 20 revised supplemental report. We pulled that out as Plaintiffs'
21 Exhibit 431, which will be in the next notebook, the binder 19.

22 A Yes, sir.

23 Q And can you tell the Court what this table represents?

24 A This table represents a summation of both recordable, which
11:48:42 25 are the small ones, and reportable, which are STEERS reports

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1 events, emission events, for the period of years with which this
2 trial is concerned; starts in 2005 and goes through mid-year
3 2013.

4 BY MR. KRATKA:

11:48:58 5 **Q** And did you request the monthly and annual numbers of
6 emission events in this table from Plaintiffs' counsel?

7 **A** I did. Plaintiffs' counsel, their aides did a wonderful
8 job of taking inches -- or feet of -- I don't want to call -- it
9 was data but not information.

11:49:17 10 **Q** And did you supervise the creation of this table?

11 **A** I did.

12 **Q** You specified the information you wanted and the format you
13 wanted it in?

14 **A** Yes.

11:49:26 15 **Q** And so the Court has seen these numbers before. This
16 particular table does include the STEERS events that were
17 covered by the EPA consent decree that the Court has ultimately
18 removed from the case?

19 **A** Yes, this is everything.

11:49:48 20 **Q** This is everything, okay. And just -- let me turn to --

21 MR. KRATKA: Sorry, strike that.

22 BY MR. KRATKA:

23 **Q** Just so we get it for the record, all emission events
24 included, what is the grand total of recordable emission events
11:50:11 25 during the period of time covered by this lawsuit?

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1 **A** 3,742.

2 **Q** I believe you may have -- I'm sorry, I may have misspoken.
3 But that -- those are the number of recordables?

4 **A** Recordables.

11:50:22 5 **Q** Okay. And how many reportable emission events?

6 **A** Reportables were total 352.

7 **Q** And the grand total is over 4,000?

8 **A** Yes, sir. 4,094 is what we came up with.

9 **Q** And those -- do you know whether that averages out to more
11:50:41 10 or less than one emission event for every day during the past
11 eight years?

12 **A** It's about that. I think it's not quite three every two
13 days, but it's more than one.

14 **Q** So more than one emission event every day?

11:50:53 15 **A** Every day.

16 **Q** And did you do -- did you look at the trends in numbers of
17 emission events over the course of this period?

18 **A** Yes. That's one of the primary things engineers look at,
19 is it getting better, getting worse.

11:51:10 20 **Q** All right. Let me turn your -- yours and the Court's
21 attention to -- let me see what page this is, the first chart
22 after 3-8 of the exhibit.

23 **A** I have it.

24 **Q** Can you describe the trends that you see in this for the
11:51:50 25 Court, the trends that are shown in this data?

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1 **A** These show the trends -- the annual trends for the
2 complex-wide. The top bar represents the recordable emission
3 events, those that are not available to the public. And the
4 lower line shows that of the STEERS-type events, if you will.

11:52:11

5 The non-public emission events show a slight
6 increase over the period in time, not a decrease, and the
7 STEERS-type events show a slight decrease, significantly
8 different than that presented earlier.

11:52:35

9 **Q** So taking into account the recordable emission events, you
10 don't see any decrease over time?

11 **A** No, sir. There's no decrease. If anything, it's an
12 increase.

13 **Q** And did you also do this analysis for each plant?

14 **A** We did, yes.

11:52:46

15 **Q** Let me turn to the next page in the exhibit which is the
16 annual number of emission events at the refinery. And can
17 you --

18 **MR. NICHOLS:** Mr. Kratka, what page number is that?

11:53:01

19 **MR. KRATKA:** It doesn't have a page number. It's
20 Figure 2 in this exhibit.

21 **THE WITNESS:** I don't see any significant trend in --
22 in recordable. It didn't decrease or increase. It's within the
23 range of random error, I would guess you'd say, a slight
24 decrease in reportable emissions, the number of events, you
25 know.

11:53:13

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1 BY MR. KRATKA:

2 **Q** And then looking at Figure 3 in this exhibit, would you
3 describe what the data shows for emission events at the chemical
4 plant.

11:53:27 5 **A** The chemical plant shows good results beginning in the year
6 2010. They significantly reduced, by 50 percent or more, the
7 smaller events that we call the recordable, with a "C"; and the
8 number of reportable events also is on a downward trend.
9 They're very low.

11:53:50 10 **Q** So you do see improvement at the chemical plant?

11 **A** Yes.

12 **Q** And primarily, that occurred after 2010?

13 **A** Yes, sir. They did something in 2010. And I wasn't able
14 to pin it down as to what was the cause other than, perhaps, one
11:54:04 15 of the problematic polymer lines. They fixed it or found out
16 what was wrong with it.

17 **Q** And finally, let's look at Figure 4 of this Plaintiffs'
18 Exhibit 431. And can you describe what you see in terms of
19 trends in emission events at the olefins plant?

11:54:24 20 **A** I see a very disturbing trend, disturbing from an
21 engineering and process design and plant management perspective.
22 An increase in the recordable, with a "C," events while the
23 reportable events remained more or less constant.

24 **Q** So no significant decrease, in fact -- no significant
11:54:48 25 decrease in reportable STEERS events?

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1 **A** No, sir.

2 **Q** And an increase in recordable events?

3 **A** Yes, sir. And most people call those "near misses."

4 **Q** Okay. What do you mean by near misses?

11:55:07 5 **A** Once a hydrocarbon escapes confinement, you're much at risk
6 for luck: Does it catch fire or not? Does it dissipate and not
7 find a source of ignition? Does it self-ignite? It depends on
8 the event, where it took place, time, things that you have no
9 control over, except from a general design viewpoint, which,
11:55:40 10 Exxon, by the way, has good safety designs; but something is
11 wrong when you see this tremendous increase in leaks.

12 **Q** Now, maybe this is -- you've anticipated my next question;
13 but if non-reportable emission events usually involve smaller
14 releases of pollution, why did you spend time reviewing them at
11:56:00 15 all?

16 **A** If I may paraphrase something from Heinz Bloch who is a
17 former Exxon machinery expert, well known in the industry, has
18 published, probably, hundreds of articles on how to improve
19 reliability, he calls them "warning events."

11:56:23 20 **Q** Warning events?

21 **A** Yes. Because unless corrected, it is all but certain a
22 major event will follow.

23 **Q** Is it possible for -- well, let me go into that a little
24 more. Does the sheer number -- are you saying that the sheer
11:56:39 25 number of recordable emission events is itself some kind of

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1 warning sign?

2 **A** Yes.

3 **Q** Why is that?

4 **A** You don't know ahead of time if it's going to be small. A
11:56:50 5 pipe or a vessel develops a leak, I can't tell you that it's
6 going to be a small leak next time, it's going to be a pinhole.
7 The example we were shown with the pinhole in the tubing, I look
8 at that and say the whole pipe was on -- on the very verge of
9 drastic complete failure. Fortunate that an operator walked by
11:57:13 10 it before it blew apart.

11 **Q** And when you say you don't know how serious an event is
12 going to be, are you talking only about the amount of emissions
13 or some other safety risk?

14 MR. NICHOLS: Your Honor, object to relevance. We're
11:57:27 15 not here on -- to try the safety risk associated with any of
16 these. This is about emission events and their impact for the
17 purposes of the Clean Air Act.

18 MR. KRATKA: Your Honor, if I could respond: The
19 Clean Air Act and Exxon's permits regulate the emissions of air
11:57:42 20 pollutants for a number of reasons. Some of the reasons are
21 because particular constituents may have toxicological effects.

22 Other reasons is that the escape of these gasses
23 contain fire and explosion risks, safety risks. And both, in
24 several places in the complaint that was filed in this case and
11:57:59 25 in some of the testimony you heard from the Plaintiffs' members,

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1 safety risks from -- physical safety risks from fires or
2 explosions are among the concerns that the people who live near
3 the plant have, along with exposure to the toxicological impacts
4 of the pollutants themselves.

11:58:23 5 MR. NICHOLS: This man has no basis of reading
6 somebody's mind in the community. But, your Honor, if they want
7 to go into safety issues at the Baytown Complex, I'll handle it
8 in cross examination.

9 THE COURT: Okay.

11:58:31 10 MR. NICHOLS: I'll withdraw my objection.

11 THE COURT: Withdraw the objection.

12 BY MR. KRATKA:

13 Q Let me follow up on the second part of what I was going to
14 ask which is is the likelihood of something serious happening --
11:58:53 15 whether it's quantity of pollutants or other safety impacts, is
16 the likelihood of such a thing in any way affected by the sheer
17 number of times that an -- that emission events occur?

18 MR. NICHOLS: I'm going to object to speculation on
19 that, your Honor.

11:59:12 20 MR. KRATKA: I'm asking for his engineering opinion on
21 that. He's an engineer. He's here as an expert.

22 MR. NICHOLS: He's asking him to predict the future
23 based on any particular event, whether it would result in
24 something else.

11:59:23 25 THE COURT: Overruled.

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1 THE WITNESS: This is not a yes-or-no answer because
2 it involves judgment, which I have many years of record of
3 making good judgments.

4 The increase in the number of loss-of-containment
11:59:42 5 issues raises concern about the overall level of integrity of
6 the plant. Is it corroding away? Is it falling apart? Are
7 these indicators of bigger problems to come?

8 From the information available to me, I can't
9 answer that because I don't have all of Exxon's root cause
12:00:08 10 analysis which, obviously, they didn't do for all the minor
11 events. You know, one and half a day, they'd have the whole
12 plant busy doing these.

13 It begs the question and, lacking definitive
14 analysis of each of these myself, I cannot say definitely, yes,
12:00:31 15 it's going to lead to more. But I say it's quite probable based
16 on the history I have of 50 years in the industry. You get more
17 leaks, you're going to have a big one. They -- they missed --
18 dodged a real big one with 500 gallons of LPG blowing out into
19 the air. That's equivalent to about 20 pounds of TNT.

12:00:52 20 BY MR. KRATKA:

21 Q All right. Well, we'll get into more of the details of
22 your analysis.

23 Just along the lines of the seriousness issue, in
24 preparing your report, did you review a study by the Chemical
12:01:01 25 Safety Board?

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1 **A** Yes.

2 THE COURT: A review of what?

3 MR. KRATKA: Pardon?

4 THE COURT: A review of what by the Chemical Safety
12:01:15 5 Board?

6 MR. KRATKA: Yes. I'm going to --

7 THE COURT: You know, what do -- what do they review?
8 Is that a publication or --

9 MR. KRATKA: I'm about to ask that. I phrased the
12:01:21 10 question poorly.

11 BY MR. KRATKA:

12 **Q** Did you -- were there -- did the chemical safety -- first
13 of all, what is the Chemical Safety Board?

14 **A** It's a group of experts assembled by the government. These
12:01:31 15 are primarily non-government experts in the field and they're
16 assembled under the Process Safety Management law to evaluate
17 incidents in the hydrocarbon processing and chemical industry.
18 When they have a fire, an accident, they may be called -- like
19 an accident investigation board for the airlines.

12:01:55 20 **Q** And did you review a Chemical Safety Board report relating
21 to the Richmond refinery in California?

22 **A** I did.

23 **Q** And if you turn to --

24 MR. KRATKA: And your Honor, I'm not introducing this
12:02:06 25 into evidence but this is -- I'm having Mr. Bowers refer to it

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1 because this is one of the documents he relied upon in coming up
2 with an opinion.

3 BY MR. KRATKA:

4 **Q** A copy of that report is in the notebook as Plaintiffs'
12:02:19 5 Exhibit 448. Can you describe for the Court what this incident
6 at the Chevron refinery involved.

7 **A** Turned right to it.

8 In this case, a line operating at high
9 temperature and moderate pressure from the crude distillation
12:02:46 10 unit, the line broke open and it spilled, if you will, a large
11 amount of flammable hydrocarbon, equivalent to, I guess, around
12 diesel fuel or fuel oil; sprayed it out in the air and it was
13 quite hot.

14 And it caught fire and it made a big, big fire
12:03:09 15 and a lot of smoke. And a lot of people in the area some
16 distance away -- now this refinery is not close to everything,
17 it's kind of separated. Anyway, a lot of people went to the
18 hospital.

19 **Q** Did -- was that described in the chemical safety report?

12:03:25 20 **A** It was described in the safety report as what were the
21 consequences and what was the root cause.

22 **Q** And would this instance be an example of what you're
23 talking about by the -- as kind of a worst-case example of what
24 can happen in an emissions event?

12:03:41 25 THE COURT: Hold it a second.

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1 MR. NICHOLS: Objection to relevance. We're not here
2 to try Richmond, California's refinery.

3 THE COURT: Sustained. All right.

4 BY MR. KRATKA:

12:03:50 5 Q Let me ask you whether any emission events at the Baytown
6 Complex that you reviewed had aspects similar to the causes of
7 the -- as described in the report of this incident at the
8 Chevron Richmond refinery?

9 MR. NICHOLS: Same objection, your Honor. We're not
12:04:01 10 here to try a comparative causation or comparative analysis of
11 events at Richmond, California, versus Baytown.

12 MR. KRATKA: Your Honor, I think it goes to if
13 Mr. Bowers is -- finds --

14 THE COURT: Well, is it part of your -- excuse me for
12:04:14 15 interrupting. But is it your cause of action that this is a
16 dangerous operation out there or is it just pollutants in the
17 air, which is important enough?

18 MR. KRATKA: The pollutants in the air are certainly
19 important enough, but the safety aspects of the air -- the air
12:04:33 20 emissions violations which involves, again, not just toxicology
21 but also flammability and explosiveness. Both -- but those are
22 both reasons why these pollutants are regulated and the impacts
23 of having Clean Air Act violations involves, for the people who
24 live near the plant and the people that work at the plant, not
12:04:56 25 just potential toxicological impacts but potential physical

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1 safety impacts.

2 MR. NICHOLS: If Mr. Bowers were here as a Baytown
3 resident and wanting to talk about his subjective views of risks
4 at the plant or what he perceives to be, but that's not it. So
12:05:12 5 this is, in essence, an effort to substitute Mr. Bowers'
6 professed engineering judgments for a lack of proof that would
7 be relevant, arguably, to standing. This man's --

8 THE COURT: All right. I want to hear more for a
9 second.

12:05:33 10 MR. NICHOLS: Yes.

11 THE COURT: He also mentioned the -- his perception
12 from -- I guess he was on site but looking at all the tables
13 that he thinks that that whole plant out there is having, what
14 is it, corrosion problems or -- I forget what term --

12:05:46 15 What term did you use?

16 THE WITNESS: It was corroding away.

17 THE COURT: It's corroding away.

18 MR. NICHOLS: If he wants to testify to those kinds of
19 opinions, that's not the issue. The issue is trying to use
12:05:55 20 hyperbole to describe a situation that does not exist at
21 Baytown.

22 THE COURT: What about the gravamen or the basis of
23 their theory getting to trial? Does it include some testimony
24 as the dangers out there as far as physical dangers, explosions,
12:06:13 25 or whatever.

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1 MR. NICHOLS: Not from a witness like this, your
2 Honor. If they had somebody in the community that was a member
3 of one of the Plaintiff groups that could show some evidence of
4 a threatened injury, a real evidence of threatened injury as to
5 that member, they would be entitled to present that evidence.

12:06:29

6 THE COURT: Because Mr. Bowers says he's not sure of
7 anything like that.

8 MR. NICHOLS: That's exactly right, your Honor. And
9 that's the other basis of my objection is this is pure
10 speculation. When -- I'll just preview the Court. It's a
11 non-jury trial. You know, if I ask this man sitting up here
12 whether he's aware of anything along the lines of what happened
13 at the Chevron facility out there in California ever having
14 occurred at ExxonMobil's complex during the time period at issue
15 in this suit, I'm fairly comfortable that this man will tell me
16 no.

12:07:03

17 THE COURT: What about the precursors that he's
18 concerned with?

19 MR. NICHOLS: That, your Honor, goes to this man's
20 personal view. It is not relevant to the issue of standing for
21 members.

12:07:13

22 THE COURT: Well, personal view or professional view?

23 MR. NICHOLS: It's his personal, professional view.
24 But it's still not relevant to any issue in the case.

12:07:26

25 THE COURT: Why not? What are they suing for?

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1 MR. NICHOLS: Because they're suing for air
2 emissions -- a set of air emissions that occurred through
3 recordable events and reportable events.

4 THE COURT: All right.

12:07:37 5 MR. NICHOLS: If this man wants to testify about those
6 and his view of the root cause of those and, as Mr. Kratka said
7 earlier, that he was hired to investigate the causes of those
8 and try to link those up back to their root causes, I'm not
9 objecting to him testifying in those areas.

12:07:55 10 We would -- this is their time. I guess the
11 Court ultimately can decide that they can use their time how
12 they want.

13 THE COURT: Well, you need to get it in the record
14 what your concern is.

12:08:04 15 MR. NICHOLS: But that's my concern is that we
16 shouldn't be spending time talking about issues at other plants
17 that have nothing to do with the actual history of the Baytown
18 facility.

19 THE COURT: Okay.

12:08:13 20 MR. KRATKA: May I respond?

21 THE COURT: Go on.

22 MR. KRATKA: I've got three areas: Number one,
23 Mr. Nichols says corrosion throughout the plant, that's
24 irrelevant. Mr. Nichols himself argued that until the
12:08:25 25 Plaintiffs -- not that we necessarily agree with this but he

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1 argued that, unless the Plaintiffs can show an underlying cause
2 that has not been addressed, we can't maintain our suit for
3 numerous different events.

4 Mr. Bowers is -- if his opinion is that there is
12:08:43 5 evidence of corrosion throughout the plant that leads to --
6 that's a common uncorrected cause of numerous emission events,
7 that goes directly to what Mr. Nichols asked for. Can I --

8 MR. NICHOLS: And I'm not objecting to that part of
9 it. What I'm objecting to is talking about the Chevron
12:08:59 10 refinery.

11 MR. KRATKA: Well, you did -- you did object. That
12 was the first thing you said when you had some objection to him
13 talking about corrosion.

14 THE COURT: All right, last point?

12:09:06 15 MR. KRATKA: I've got two more points.

16 THE COURT: You said you had three.

17 MR. KRATKA: Right. That was one. I have two to go.

18 THE COURT: Go on.

19 MR. KRATKA: Sorry. I apologize, your Honor.

12:09:13 20 THE COURT: Go on.

21 MR. KRATKA: Secondly, the reasonableness of the
22 members' concern. Ms. Aguirre, for example, testified that when
23 she hears air raid sirens going off at the plant, when there is
24 no information out there; Mr. Cottar testified that when he
12:09:30 25 sees, you know, large flaring events and what he perceived to be

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1 people fleeing the plant, they have concerns about physical
2 safety.

3 THE COURT: But are we here to address those concerns?

4 MR. KRATKA: Yes.

12:09:41

5 THE COURT: Yes.

6 MR. KRATKA: You're right. So let me answer this in
7 two parts. One is Mr. Bowers' testimony is relevant to -- his
8 expert opinion as to the reasonableness of the residents'
9 concerns for safety, and the residents' concern for safety was
10 laid out right in our complaint in the case.

12:09:56

11 THE COURT: All right. Don't worry about it.

12 What's your third point?

13 MR. KRATKA: Third point is that Mr. Nichols is saying
14 that any information from other plants is irrelevant.

12:10:06

15 Mr. Kovacs testified that it's important to share information
16 not just within the Baytown Complex but within different
17 facilities because each facility can learn from experiences of
18 the others --

19 THE COURT: All right.

12:10:18

20 MR. KRATKA: -- so an experience somewhere else -- and
21 I'm about to ask him whether he found conditions at the Chevron
22 plant in that incident that he found similar issues here.

23 THE COURT: I'm going to mention it to you: It's your
24 time. It's your witness. I understand the objections, and
25 they're on the record. When it comes time to decide, I'm going

12:10:32

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1 to go back to the complaint and I'm going to track that. But as
2 a matter of --

3 MR. KRATKA: I'll just point out --

4 THE COURT: Overrule the objection.

12:10:45

5 MR. KRATKA: Okay. And I'll just point out for the
6 record that the references I was going to cite to the complaint
7 where we raised concern about explosions is paragraphs 5 and 84
8 of the complaint.

9 THE COURT: Yeah.

12:10:57

10 BY MR. KRATKA:

11 Q So Mr. Bowers, in your review of emission events at the
12 Baytown Complex, did you find any that had causes that were
13 similar to the cause of the event described in the Chemical
14 Safety Board report with respect to the Richmond refinery?

12:11:15

15 A Yes.

16 Q If -- can you describe which two events those were and what
17 the similar cause was.

12:11:32

18 A Well, one of the events -- I don't remember the number --
19 concerned a hot rundown line from a distillation tower going to
20 a heat exchanger. And the line failed from hot internal
21 corrosion. It was a service that, obviously, previously had not
22 been considered corrosive or it would have been built with a
23 corrosion-resistant alloy per Exxon's standards.

12:12:02

24 And the probable cause is, over the years, Exxon
25 has, by choice, chosen to use heavier and more sour crudes --

Bowers - Direct/Kratka

1 they have more sulfur in them -- and they built additional
2 hydrotreating facilities and sulfur plants to remove that.

3 And so -- and there's another one. I'm trying to
4 remember where it is, but it's -- it's very similar.

12:12:21 5 **Q** If it would refresh your recollection to refer to Page 13
6 of your supplemental report, which is -- Exhibit 430, I think,
7 is the supplemental report. You got it?

8 **A** Yes, sir. There's two. They're very similar. One was on
9 the catalytic light ends unit, and that unit -- the light
12:12:55 10 products, typically, have a significant amount of sulfur and
11 other corrosive elements in it and the line failed. And it's
12 obvious that it was from internal corrosion, was so stated.

13 It -- it's very hard, if not impossible, to
14 determine the condition of hot piping while it's in service. It
12:13:20 15 is -- as a matter of fact, the Chemical Safety Board so states
16 in their opinions. While it's in operation, any -- anything you
17 do is more or less meaningless.

18 Similar incident on the cat cracker rundown line.
19 The product that is not normally corrosive corroded away the
12:13:42 20 pipe.

21 **Q** And so the underlying similarity between the Chevron
22 Richmond event and these events at Baytown are the changing
23 character --

24 **A** Changing conditions --

12:13:50 25 **Q** -- of the products in the pipes?

Bowers - Direct/Kratka

1 **A** Yes. And this is a -- a fact of refining life today.

2 **Q** All right. Let me ask you some questions about -- we are
3 dealing with a large -- the Court is dealing and you are dealing
4 with a very large number of emission events. So let me ask you
5 some questions about how you went about analyzing these events.

12:14:09

6 Did you do anything initially to get an overall
7 sense of the many emission events you were asked to analyze?

8 **A** Yes.

9 **Q** What did you do?

12:14:22

10 **A** I read. I read a lot.

11 **Q** STEERS reports?

12 **A** STEERS reports. There are deviation reports. There are --
13 everything I had available. I read fast and I put in several
14 hours at a time.

12:14:38

15 **Q** And after getting a sense of the overall picture, did you
16 select any events for deeper analysis?

17 **A** I did.

18 **Q** And did the analysis of specific individual events enable
19 you to reach any conclusions about the causes of those events
20 and whether they were preventible?

12:14:54

21 **A** Yes.

22 **Q** And then, in addition to the in-depth analysis of
23 individual events, did you also look for patterns or common
24 factors in the occurrence of emission events at the complex?

12:15:07

25 **A** I did.

Bowers - Voir Dire/Nichols

1 Q And why did you look for patterns?

2 A Patterns are generally pretty predictive. If a pattern is
3 ongoing, it will keep going until you do something to stop it.
4 You have to stop the root cause, interrupt it.

12:15:25 5 Q And did you, in fact, find patterns among the emission
6 events that had occurred at the Baytown Complex?

7 A I did.

8 Q And are those patterns reflected in Exhibits 4 through 15
9 of Exhibit 430, your revised supplemental report?

12:15:40 10 A Yes, they are.

11 MR. KRATKA: And, your Honor, I just, again, for ease
12 of reference, those exhibits have been excerpted separately as
13 Plaintiffs' Exhibit 433 through 444. And in referring to them,
14 I'll go by those separate exhibit numbers.

12:15:58 15 THE COURT: All right.

16 BY MR. KRATKA:

17 Q Are some of these -- I'm going to ask you some questions
18 about how you compiled these tables showing patterns.

19 MR. NICHOLS: Your Honor, may I take the witness on
12:16:13 20 voir dire.

21 THE COURT: Yes, go on.

22 VOIR DIRE EXAMINATION

23 BY MR. NICHOLS:

24 Q Mr. Kratka asked you a question, Mr. Bowers, about "you
12:16:19 25 compiled."

Bowers - Direct/Kratka

1 It's true, is it not, that these charts,
2 beginning with Exhibit 433, were compiled by someone at the
3 National Environmental Law Center and given to you for review?

4 MR. KRATKA: Your Honor, I was about to go through a
12:16:37 5 series of questions establishing exactly how --

6 THE COURT: All right. Lay some predicate. Why don't
7 we see -- we'll see what the predicate is.

8 MR. KRATKA: Okay.

9 DIRECT EXAMINATION

10 (continued)
12:16:43

11 BY MR. KRATKA:

12 Q First of all, Mr. Bowers, whose idea was it to compile
13 these tables?

14 A It was mine.

12:16:52 15 Q Did you personally assemble these tables by yourself?

16 A No, I did not.

17 Q Who did the actual labor of compiling them?

18 A The employees at NELC and their staff, at my direction.

19 Q Why didn't you compile these tables yourself?

12:17:04 20 A It's extremely time consuming and my arthritic hands are
21 not as fast on the keyboard.

22 Q Was the Plaintiffs' legal team that worked on compiling
23 these tables, were they operating under your direction?

24 A They were.

12:17:19 25 Q And who decided on which categories or how to categorize

Bowers - Direct/Kratka

1 emission events?

2 **A** I identified the categories I wanted these sorted into.

3 **Q** And was the information that was used to assign an

4 emissions event to a particular unit -- for example, at the

12:17:35 5 refinery, was the information used to assign an emission event

6 to a unit in some of these tables based on Exxon's own

7 description of the unit or did that come from somewhere else?

8 THE COURT: Hold it. Their own description of the

9 unit relative to this event?

12:17:51 10 MR. KRATKA: Yes.

11 BY MR. KRATKA:

12 **Q** In other words, if Exxon itself, in its STEERS Report,

13 identified an event as occurring at the flexicoker unit, was

14 that the basis on which you directed the legal staff to assign

12:18:04 15 that event?

16 **A** Yes. When I wanted to, you know, list them by unit, that's

17 what we had, was only Exxon's definition or descriptor of where

18 the event took place.

19 **Q** And so you directed Plaintiffs' legal staff to use Exxon's

12:18:19 20 own descriptors?

21 **A** Yes, sir. That's what we had. We had Excel spreadsheets

22 furnished to us by Exxon under discovery.

23 **Q** And similarly, for tables in which you assigned events to a

24 particular common type of equipment, did you direct the legal

12:18:36 25 staff to use Exxon's own description of the type of equipment

Bowers - Direct/Kratka

1 involved?

2 **A** Yes.

3 **Q** And similarly, when you attempted to assign emission events
4 to a particular cause, did you direct Plaintiffs' legal staff to
5 assign events based on Exxon's own description of the cause?

12:18:50

6 **A** Yes.

7 **Q** And these descriptions from Exxon were contained in
8 documents generated by Exxon itself?

9 **A** I don't know. They were supplied by Exxon.

12:19:06

10 **Q** Were they -- did they come from -- basically, from STEERS
11 reports and the non --

12 **A** From STEERS reports and under discovery.

13 **Q** -- and the non-reportable emission events spreadsheets?

14 **A** Yes, sir.

12:19:17

15 **Q** And you had already testified that you yourself had
16 personally reviewed Exxon STEERS Reports and non-reportable
17 spreadsheets, right?

18 **A** Yes.

19 **Q** And once these initial versions of these tables were
20 compiled, did you review the tables for accuracy?

12:19:32

21 **A** I did.

22 **Q** And did you, in fact, satisfy yourself that these tables
23 were sufficiently accurate?

24 **A** Yes. Once there were a few errors we had corrected.

12:19:47

25 MR. KRATKA: Proceed?

Bowers - Direct/Kratka

1 MR. NICHOLS: I don't know. Is there some need for me
2 to --

3 THE COURT: I was looking to --

4 MR. KRATKA: You had an objection.

12:19:53 5 THE COURT: Are you ready for him to proceed?

6 MR. NICHOLS: Your Honor, I think the issues that I've
7 got, I'll be able to handle on cross examination.

8 THE COURT: Okay, thank you.

9 Go right ahead. Thank you.

12:20:14 10 BY MR. KRATKA:

11 Q Now, as you've just gone through, some of these tables
12 you've compiled assign emission events based on -- or
13 categorized emission events based on which unit they occurred
14 at, right?

12:20:25 15 A Yes.

16 Q Why did you decide to categorize emission events according
17 to where they occurred?

18 A I wanted to examine, if you will, determine were there
19 patterns? Was a particular unit troublesome? Was it a bad
12:20:41 20 actor or was it unrelated events?

21 Q And does categorizing events by unit, determining what -- a
22 unit might be a bad actor, does that -- can that provide any
23 information about the causes of events or the preventability of
24 events?

12:21:00 25 A Yes.

Bowers - Direct/Kratka

1 Q And are some of your tables organized according to the type
2 of equipment involved?

3 A Yes. Yes.

12:21:11

4 Q And again, why would you categorize emission events by the
5 recurring type of equipment involved?

6 A Again, I'm looking for patterns. Was a particular type of
7 equipment unreliable?

12:21:23

8 Q And does the same answer apply to why you categorized --
9 you made another cut and categorized emission events by the
10 stated cause of the event?

11 A Yes.

12:21:39

12 Q Now, you -- did you hear Mr. -- were you in court yesterday
13 when Mr. Kovacs testified about using information about the
14 cause of one event, one emission event to create shared learning
15 to prevent other events?

16 A I heard that.

17 Q Did you agree with that approach?

18 A Yes.

12:21:48

19 Q And is that approach consistent with the way you yourself
20 approach the question of looking for common causes and the
21 potential prevention of emission events at the Baytown Complex?

22 A Yes.

12:22:14

23 Q Now, right now, I'm just -- again, for the Court's
24 information and ability to assess the more detailed analysis
25 that will come later, right now, I just want to get a brief

Bowers - Direct/Kratka

1 statement of your overall conclusions that you've drawn from
2 your work in this case.

3 THE COURT: Why don't we do this: Remind me what
4 exhibit is Mr. Bowers' resume.

12:22:27 5 MR. KRATKA: 432, I believe.

6 THE COURT: Okay, thank you.

7 MR. KRATKA: No, no, that's wrong. Yep, it's right.
8 432.

9 THE COURT: 432. Yeah, got it. Okay.

12:22:43 10 BY MR. KRATKA:

11 Q Now, Mr. Bowers, based on your analysis of the emission
12 events at the Baytown Complex, did you, in fact, determine that
13 there were common factors or common causes among emission
14 events?

12:22:56 15 A Yes.

16 Q And some of those common factors and causes are reflected
17 in these tables that we've just been discussing?

18 A Yes.

19 Q And did this analysis enable you to form an opinion about
12:23:08 20 whether or not Exxon could have prevented emission events that
21 occurred at the Baytown Complex?

22 A Yes, sir.

23 Q And in summary, what did you conclude -- what did you
24 conclude about whether Exxon could have prevented the emission
12:23:22 25 events that occurred at the Baytown Complex going back to

Bowers - Direct/Kratka

1 October of 2005?

2 **A** In my own words, corrosion is not an instantaneous failure.
3 It takes place over months, years, sometimes hours, but in --
4 but not in this refinery. It's detectable and it is
5 completely -- a leak from corrosion is completely preventible.
6 It takes effort. It takes diligent inspection. And when
7 corrosion is found, one has to take care of the root cause or it
8 will continue.

9 **Q** Did you form any opinion as to whether better preventive
10 maintenance could have prevented any past emission events at the
11 Baytown Complex?

12 **A** Yes.

13 **Q** Briefly, what did you conclude?

14 THE COURT: All right. So, before I forget,
15 corrosion, you feel, is the primary reason for these events or
16 is the reason for the events subject to this lawsuit?

17 THE WITNESS: Yes, sir.

18 THE COURT: Okay, thank you.

19 And what was -- now, where do you go next,
20 corrosion and maintenance?

21 MR. KRATKA: Well, now, I'm asking -- yes, whether --
22 and, your Honor, we'll get into -- yeah, if Mr. Bowers -- I
23 guess you'll see -- nevermind.

24 Strike that.

25 We'll get into the full scope of Mr. Bowers'

Bowers - Direct/Kratka

1 opinion. But he has identified corrosion as the major problem.

2 THE COURT: He's giving me his opinion now, right?

3 MR. KRATKA: Yes.

4 BY MR. KRATKA:

12:24:46 5 Q And briefly, what did you conclude about whether preventive
6 maintenance could have prevented any of the emission events that
7 have occurred at the Baytown Complex since 2005?

8 A Exxon at Baytown practices a form of maintenance that was
9 originally developed in the airline industry. It's called
12:25:06 10 "predictive maintenance," I believe that's the name for it. And
11 it consists, in their -- their facility, as they describe it, of
12 two parts. One is measuring the performance of a piece of
13 equipment and predicting how much longer it will run before it
14 has to be taken down for -- well, before something serious
12:25:34 15 happens.

16 THE COURT: Again, how do you phrase this maintenance?
17 Not preventative. There was another term you used.

18 THE WITNESS: Predictive.

19 THE COURT: Predictive.

12:25:44 20 THE WITNESS: When you measure the vibration in a --
21 in a compressor, for instance, or you listen for a rod knock,
22 you know, knock-knock-knock, and you evaluate the condition of
23 that equipment and say, "It's good for another thousand hours,
24 doesn't need anything now."

12:25:56 25 And the other kind is actual preventive

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1 maintenance: when you change the oil in a gear box on a regular
2 basis, every three months, with the goal of preventing wear and
3 failure. While one form says, "Don't do anything to it, run it
4 until just before it breaks" --

12:26:18 5 THE COURT: That's preventive maintenance?

6 THE WITNESS: Preventive maintenance says, "We're
7 going to change the oil."

8 Predictive maintenance says, "Hey, it's running
9 good, don't do anything."

12:26:30 10 And it appears Exxon has excellent operations in
11 terms of how long between turn-arounds. They run the longest
12 between turn-arounds of anybody in the world.

13 BY MR. KRATKA:

14 Q And what is a turn-around?

12:26:43 15 A It's when you take the plant down for overall, general
16 maintenance all over the place, fix everything you can or
17 everything you need to before it will run to the next
18 turn-around.

19 THE COURT: By the way, keep in mind, if anybody needs
12:26:56 20 a break any time, we'll take a break. We're going to keep
21 going. Anybody need a break, let me know.

22 THE WITNESS: Yes, sir.

23 THE COURT: It happens in every case. So no problem.

24 THE WITNESS: Thank you.

12:27:05 25 THE COURT: I tell my jurors the same thing. So I

Bowers - Direct/Kratka

1 plan to go to 1:05, unless I hear otherwise. We'll take five
2 minutes and still go on to that time.

3 THE WITNESS: Thank you, your Honor.

4 THE COURT: Thank you.

12:27:20 5 BY MR. KRATKA:

6 Q Briefly -- go ahead.

7 A The difficulty with the maintenance as practiced at Exxon
8 is that a significant number of pieces of equipment fail in
9 service and this usually leads to an emissions event. This is
10 an excellent way to minimize overall maintenance costs; that you
11 use up the facility, use up that compress -- all that
12 compressor's life before I do anything to it because I'm going
13 to change all the -- all the parts inside there anyways.

14 I personally and professionally feel that's
15 risky. Because, as Mr. Heinz Bloch so clearly says, every time
16 you have an incident where there's a loss of containment,
17 you're -- you're -- you're lighting the match and things can
18 happen beyond your expectations and things happen -- do happen
19 that are unforeseen and you have a major catastrophe.

12:28:28 20 Q And so in the --

21 THE COURT: Well, even with preventive maintenance and
22 predicted maintenance, there can always be things that go wrong,
23 correct?

24 THE WITNESS: Well, stuff happens.

12:28:35 25 THE COURT: Yeah.

Bowers - Direct/Kratka

1 THE WITNESS: Unexpected stuff.

2 BY MR. KRATKA:

3 Q Well, let me ask a followup on that specific point.

4 Did you form any opinion as to whether design
12:28:45 5 changes or other capital improvements could have prevented any
6 emissions at the plant even in a situation where there might --
7 where something might have broken? Were there design changes
8 that could have been done that would prevent any emissions from
9 occurring from those type of unavoidable --

12:28:55 10 A Yes.

11 Q -- truly unavoidable --

12 THE COURT: I'm going to stop for a second because I
13 got a question. All right?

14 Mr. Nichols --

12:29:08 15 MR. NICHOLS: Yes, sir.

16 THE COURT: -- is it your position that Exxon does
17 preventative maintenance and predictive maintenance?

18 MR. NICHOLS: Yes, sir.

19 THE COURT: That's all. Thank you. I just wanted to
12:29:17 20 know where the line is drawn. Okay.

21 Yes, sir.

22 MR. KRATKA: Could you read back that last question,
23 please.

24 THE COURT: Not my question.

12:29:23 25 MR. KRATKA: Second to the last question.

Bowers - Voir Dire/Nichols

1 (The requested question was read.)

2 MR. KRATKA: You know what, it was a poorly worded
3 question. I'm going to rephrase it.

4 THE COURT: Okay.

12:29:59 5 MR. KRATKA: I don't really want to hear it read back
6 to me.

7 BY MR. KRATKA:

8 Q Mr. Bowers, did you form any opinion as to whether design
9 changes or other types of capital improvements at the complex
10 could have prevented emissions from emission events?

11 A I did.

12 Q I'm -- okay. We will get to those in detail in due time.

13 You've been talking about leaks and corrosion
14 already, so let's go straight to Plaintiffs' Exhibit 436.

12:30:48 15 THE COURT: Okay. 436 has over a hundred pages it
16 looks like, correct?

17 MR. KRATKA: Yeah, that's -- exactly, your Honor.

18 MR. NICHOLS: May I take the witness on voir dire?

19 THE COURT: Yes, sir.

12:30:55 20 VOIR DIRE EXAMINATION

21 BY MR. NICHOLS:

22 Q Mr. Bowers, is it your position that each and every event
23 that's listed in here --

24 THE COURT: In what?

12:31:01 25 //

Bowers - Direct/Kratka

1 BY MR. NICHOLS:

2 **Q** -- in Exhibit 436 was caused by corrosion?

3 **A** No.

4 **Q** Okay.

12:31:09

5 DIRECT EXAMINATION

6 (continued)

7 BY MR. KRATKA:

8 **Q** Mr. Bowers, can you describe what Exhibit 436 is.

12:31:20

9 **A** Exhibit 436 tabulates the emission events classified by
10 Exxon as a leak, a loss of containment.

11 **Q** An emission either from a leak or from an event that was
12 caused by a leak?

13 **A** Yes. A leak happened, the stuff got out.

12:31:43

14 **Q** And just -- before we get into the substance of your
15 opinion about leaks and corrosion and all the rest, can we just
16 first take a look at the number of events included --
17 categorized by Exxon as leaks?

12:32:01

18 Can you read for the Court exactly how many
19 leak-related emission events there have been in the past eight
20 years.

21 **A** The tabulation says there's 1,758 unintended emissions
22 caused by leaks as defined by and tabulated by Exxon.

23 **Q** And as we can see, there are literally a hundred pages of
24 individual -- lists of individual events caused by leaks?

12:32:23

25 **A** Yes.

Bowers - Voir Dire/Nichols - Direct/Kratka

1 Q And on the first page of this Exhibit 436, Page 7-1, did
2 you direct a graph to be created showing the number of leaks?

3 A Yes, I did. I told the analyst to -- to graph this for me.
4 I told the analyst who was manipulating the spreadsheet to
5 construct a graph.

12:32:50

6 MR. NICHOLS: And can I ask another question on voir
7 dire, Judge?

8 VOIR DIRE EXAMINATION

9 BY MR. NICHOLS:

12:32:51

10 Q Who is the analyst that you're talking about?

11 A An employee of NELC. What's the name?

12 Q Yes, sir.

13 A It's Ms. Mary Rock.

14 Q Okay.

12:33:02

15 MR. KRATKA: And Mary Rock is a paralegal, seated at
16 counsel's table.

17 DIRECT EXAMINATION

18 (continued)

19 BY MR. KRATKA:

12:33:07

20 Q And this graph shows how many leak-related emission events
21 occurred by month?

22 A Yes. That was what I asked her to do.

23 Q And can you describe for the Court any conclusions you draw
24 about the frequency of leak-related emission events?

12:33:22

25 MR. NICHOLS: May I ask another question on voir dire?

Bowers - Direct/Kratka

1 THE COURT: No, sir. Let's move it along.

2 THE WITNESS: The evidence indicates the number of
3 leaks is increasing with time, roughly doubled.

4 BY MR. KRATKA:

12:33:42 5 Q Doubled from the beginning of the --

6 A Yes.

7 Q -- period covered by the lawsuit to 2013?

8 A May I add a qualifier?

9 Q Sure.

12:33:51 10 A I am not personally aware of whether or not Exxon's method
11 for determining leaks has become more sensitive with time. The
12 information does not show how a leak was detected.

13 Q All right. And if we turn to the next page, the second
14 page of the exhibit, there's a bar graph.

12:34:23 15 Can you explain for the Court what this bar graph
16 shows.

17 A This -- this bar graph shows the number of hours in the
18 period versus the number of hours that were involved in leaks as
19 reported by Exxon, how many hours was there something leaking.

12:34:46 20 In many cases there are more than one leak happening
21 simultaneously --

22 Q So with --

23 A -- in one place.

24 Q So with more than one leak happening simultaneously, the
12:34:55 25 total duration of leaking pollutants totals more hours than the

Bowers - Direct/Kratka

1 actual number of hours from 2005 to 2013?

2 **A** As shown by their data.

3 **Q** This is drawn from the "Duration" column of Exxon's own
4 emissions event reports?

12:35:12 5 **A** Yes, sir.

6 THE COURT: All right. What's the impact of that, in
7 your opinion?

8 THE WITNESS: To me?

9 THE COURT: Yes, sir. What impact is that?

12:35:23 10 THE WITNESS: It tells me there's more than one leak
11 going on all the time.

12 THE COURT: Okay. That's what I thought.

13 Go on.

14 BY MR. KRATKA:

12:35:31 15 **Q** Now, let's talk about why you decided to use leaks as a
16 single category for categorizing emission events.

17 Do you consider leaks important from an
18 engineering standpoint?

19 **A** Yes.

12:35:43 20 **Q** Why is that?

21 **A** They're not supposed to happen.

22 **Q** Why is that?

23 **A** It represents a failure of containment. Everything about
24 the design of a refinery and its construction is intended to
12:35:58 25 contain the hydrocarbons or other material within a solid

Bowers - Direct/Kratka

1 barrier, steel, usually, not just flying around.

2 **Q** And are leaks important in your --

3 **MR. KRATKA:** Well, strike that.

4 **BY MR. KRATKA:**

12:36:21 5 **Q** Is -- does the presence of a leak of hydrocarbons create
6 any safety issues?

7 **A** Yes.

8 **Q** And why is that?

9 **MR. NICHOLS:** Your Honor, same objection as before.

12:36:34 10 **THE COURT:** Overruled.

11 **THE WITNESS:** Having a hydrocarbon exposed to air
12 gives you two of the elements necessary for a fire or explosion.
13 All you need left is a source of ignition. And in a refinery,
14 often, the metal surface is hot enough to cause the hydrocarbon
15 to ignite.

12:36:53

16 **BY MR. KRATKA:**

17 **Q** Can static electricity also be an ignition source?

18 **A** It can.

19 **Q** Can a piece of smoldering wood be an ignition source?

12:37:05

20 **A** Yes.

21 **Q** What types of equipment at the Baytown Complex can leak?

22 **A** Any rotating equipment that's not hermetically sealed.

23 **Q** And rotating equipment would be a compressor?

24 **A** Compressors, pumps. There are a few other small types but,
12:37:23 25 basically, pumps and compressors, which have seals at the shaft

Bowers - Direct/Kratka

1 to keep the stuff from leaking out. You got pipes, you have
2 flanges where the pipes are -- are joined with a gasket at
3 connection. You have any connection to the pipe.

4 Sometimes instruments are screwed into a -- a
12:37:41 5 fitting, although those are very, very limited in number. You
6 can have leaks develop, like, say, inside heat exchanger tubes,
7 leaks to the other fluid or leaks to cooling water which then
8 goes to the air.

9 Q And what have -- based on your analysis of emission events
12:38:04 10 at the Baytown Complex, what are some of the causes given by
11 Exxon for the various leaks from pipes and other equipment, if
12 you just generally recall?

13 A In many -- in many cases, it's not specified in their -- in
14 their report.

12:38:24 15 THE COURT: What -- does it just say "leaks"?

16 THE WITNESS: It just says "leak."

17 And leak from -- if it's a leak from a flange,
18 it's a failure of either the bolts or the gasket on the flange.
19 If it's a leak in a pipe, it's from corrosion, either external
12:38:38 20 corrosion or internal corrosion. Occasionally --

21 THE COURT: By "internal corrosion," you mean inside
22 whatever is passing through it or from the structure of the --
23 of the metal itself?

24 THE WITNESS: What's passing through it --

12:38:50 25 THE COURT: Causing --

Bowers - Direct/Kratka

1 THE WITNESS: -- causes a corrosive condition.

2 THE COURT: Versus outside corrosion.

3 THE WITNESS: Outside, it's moisture gets in
4 underneath the insulation or pipe, and it just rusts it away.

12:39:00 5 THE COURT: Go on.

6 BY MR. KRATKA:

7 Q So, can corrosion come from the outside?

8 A Yes.

9 Q And can corrosion come from the inside?

12:39:07 10 A Yes.

11 Q Can vibration cause leaks?

12 A Yes.

13 Q How does that happen?

14 A Metal is subject to fatigue. Repeated flexing of the metal
12:39:19 15 will eventually cause it to get brittle and cracks to form. And
16 as it keeps flexing it, the cracks get bigger and eventually
17 they break.

18 Q Can temperature changes cause leaks?

19 A Yes.

12:39:31 20 Q How does that work?

21 A There's two mechanisms. One is at bolted connections,
22 whether it's a manway or a flange, cycling of temperature will
23 cause the bolts to stretch and the gasket to compress. You keep
24 cycling it and if there's not enough strength in the bolts, it
12:39:50 25 will eventually leak.

Bowers - Direct/Kratka

1 Q And what factors determine how long it would take for
2 corrosion to cause, say, a pinhole leak in a pipe?

3 A The time to failure depends on the thickness of the
4 material, how thick is the pipe wall; the corrosive environment,
5 what is causing -- the chemical causing the corrosion; how
6 concentrated it is and how hot it is.

7 Q And you've already testified that at a refinery or chemical
8 plant corrosion takes place over some length of time?

9 A Typically, it's over some period of years.

10 Q And did you find any instances in which Exxon reported that
11 leaks were caused by corrosion at the complex?

12 A Yes, sir.

13 Q And did you find any instances in which Exxon reported that
14 leaks were caused by metal fatigue at the complex?

15 A Yes.

16 Q Did you find any instances in which Exxon reported that
17 leaks were caused by temperature changes?

18 A I don't recall specifically. I just don't recall without
19 going back over it.

20 Q All right. Have you drawn any conclusions as to whether
21 leaks that were caused by corrosion or vibrations or metal
22 fatigue were sudden occurrences?

23 A I didn't find any that were sudden, meaning in less than
24 one day it started and finished.

25 Q Can there be visible warning signs of corrosion?

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1 **A** Yes.

2 **Q** What are the visible warning signs?

3 **A** You can see rust on the exterior of a pipe if you look at
4 it.

12:41:26 5 THE COURT: What if it's covered by insulation?

6 THE WITNESS: That's the ubiquitous corrosion under
7 insulation which is a problem throughout the industry now,
8 because these units are old. They're 30 years old, 40 years
9 old, 20 years old.

12:41:40 10 THE COURT: So what do they have to do? How do you
11 determine corrosion underneath insulation?

12 THE WITNESS: You take the insulation off and look.

13 THE COURT: So you do that -- have to do that -- of
14 course, they state, if I remember, they have what -- about

12:41:51 15 thousand miles of pipes going in there, and let's assume a good
16 number of that has insulation. So in other words, the
17 corrective measure would mean take all the insulation off, check
18 it, and put it back on?

19 THE WITNESS: (Indicated yes.)

12:42:07 20 THE COURT: Okay.

21 THE WITNESS: Yes, sir.

22 BY MR. KRATKA:

23 **Q** Can there be detectible warning signs of vibrations?

24 **A** Yes.

12:42:13 25 **Q** And what would those signs be?

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1 **A** You put your hand on it or you measure it with a
2 instrument. A routine practice in many refineries, the one I
3 learned from Texaco, when you have an unit down for any reason,
4 all these small connections, bleeders and vents, they had
5 trained inspectors that whopped each one of them with a
6 three-pound blacksmith's hammer and listened to it. And it
7 should give a -- a clear ring.

8 **Q** Like a bell?

9 **A** Like a bell. And if it's muted and muddy, that means
10 there's something wrong. It's no longer solid.

11 THE COURT: But you have to get under the insulation
12 to do that.

13 THE WITNESS: Well, the connections are sticking out.

14 THE COURT: Oh, the -- all right. Connections.

15 THE WITNESS: And an uninsulated pipe, just bang on
16 the pipe. "Hey, did it have a good ring or not?" If it didn't,
17 why not. And this was a very effective tool. I know we
18 replaced that with technology. We use ultrasound detectors,
19 only they -- but they only check the spot where you have the
20 measurement -- instrument, that little spot, quarter-inch, may
21 not be representative of what's really going on.

22 BY MR. KRATKA:

23 **Q** And so if you're checking with an ultrasonic piece of
24 equipment, you need to do many checks?

25 **A** Yes. And that raises your odds of finding a corrosion pit.

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1 Q And do you need to look in spots that are more likely to
2 suffer corrosion?

3 A Yes.

4 Q Do you know how old these -- we talked about thousands of
12:43:35 5 miles of piping at the complex. Do you know how old the piping
6 systems at the Baytown Complex are?

7 A I do not have personal knowledge. I can only speculate.

8 Q I don't want you to speculate.

9 Is the Baytown Complex a -- would you consider it
12:43:51 10 to be a newer refinery or an older refinery?

11 A Very old.

12 Q And do you know whether or not Exxon has replaced much of
13 its piping?

14 A I do not know.

12:44:06 15 Q Do you know how many -- well, we heard yesterday there are
16 a million valves at the Baytown Complex, which raises the
17 question -- and your Honor asked it. There's thousands of miles
18 of piping, there's a million valves. Is it even possible to
19 prevent leaks on that much piping, that many valves and other
12:44:28 20 types of equipment?

21 A Absolutely, yes.

22 Q What does it take or what would it take?

23 A Diligent inspection.

24 Q Would it take manpower?

12:44:40 25 A It takes manpower.

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1 THE COURT: Take a lot of manpower, wouldn't it?

2 THE WITNESS: Not that many --

3 THE COURT: How about the --

4 THE WITNESS: -- going around all the time.

12:44:46 5 THE COURT: Well, you know the size of that facility
6 out there. How long would it take, do you think, till it was in
7 shape -- all the items that you suggested that ought to be done?

8 THE WITNESS: Well, my original estimate was that
9 they're under-spending by, you know, a lot of money, 90 million
12:45:00 10 or more a year.

11 THE COURT: Under-spending?

12 THE WITNESS: Under-spending. And that would give you
13 900 people walking around checking. And that's a lot. That's a
14 lot. You know, you would check some pipes --

12:45:15 15 THE COURT: All right. So you're suggesting that or
16 is it that's how much it would take to do it, that 90 million
17 and 900 people?

18 THE WITNESS: My opinion is it's -- they're
19 under-spending by at least that much.

12:45:25 20 THE COURT: Okay.

21 THE WITNESS: That's -- which is what is one of the
22 major contributors to these small leaks that are growing in
23 numbers and will eventually likely lead to major releases.

24 THE COURT: You were here before. They had said they
12:45:38 25 have, including contractors, over 5,000 folks out there. So

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1 they need, you say, based upon the productivity of that -- that
2 operation, they need about 900 more constantly going around
3 checking?

4 THE WITNESS: Yes, at least that.

12:45:54 5 THE COURT: Okay.

6 MR. KRATKA: And, your Honor, we'll get into just how
7 we calculated that number.

8 THE COURT: Sure.

9 BY MR. KRATKA:

12:46:03 10 **Q** Now based on the records you've reviewed for the case, have
11 you determined whether Exxon has done everything it could to
12 prevent some or all of these 1,758 emission events caused by
13 leaks?

14 **A** They have not.

12:46:20 15 **Q** Based on your review of the evidence, the results, has
16 Exxon performed sufficiently frequent inspections on these pipes
17 and valves and other components?

18 MR. NICHOLS: Your Honor, may I ask a question on voir
19 dire?

12:46:34 20 THE COURT: All right. Go on.

21 VOIR DIRE EXAMINATION

22 BY MR. NICHOLS:

23 **Q** Mr. Bowers, are you familiar with the inspection protocol
24 that's in place at the Baytown Complex?

12:46:40 25 **A** I am. I'm not intimately familiar with it.

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1 Q Have you seen any documentation concerning that protocol?

2 A I have.

3 Q How many people are out there working on inspections of
4 pipe?

12:46:51 5 A I don't know.

6 Q Do you know how frequently they go out and check pieces of
7 pipe?

8 A For some I know it's every 20 years as stated by policy.

9 THE COURT: You can get to that in cross examination.

12:47:05 10 MR. NICHOLS: Yes, sir.

11 THE COURT: Go on, Keep going.

12 DIRECT EXAMINATION

13 (continued)

14 BY MR. KRATKA:

12:47:07 15 Q Mr. Bowers, getting right to Mr. Nichols' point, Exxon
16 provided an answer to an interrogatory in this case where they
17 say they performed over 200,000 inspections in the year 2011.

18 Do you know whether Exxon has performed the type
19 of inspections in the right places that you were describing a
12:47:28 20 moment ago?

21 A Could you define what you mean by "right."

22 Q Well, I asked you about, for example, ultrasonic thickness
23 inspections for pipes. And you answered that you need to do a
24 lot of --

12:47:41 25 THE COURT: Did he say thickness or just the condition

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1 of the pipe with ultra sound, it covered about a quarter of an
2 inch? That would -- that'd be what? The condition of the pipe?
3 Or what was your --

4 BY MR. KRATKA:

12:47:51 5 **Q** Does the ultrasonic inspection measure the thickness of the
6 pipe -- of the pipe wall?

7 **A** That's -- it's generally interpreted as that. It gives you
8 a reflection off of where the sound metal surface is. There may
9 be corrosion underneath it coming on top of it. It will measure
12:48:08 10 to the bottom of the pit if you go from the outside in. But you
11 have to be in contact with the outside surface. And if it's
12 hot, hot surface, you're wasting your time.

13 **Q** Let me ask you this a little more generally: Does Exxon's
14 assertion, statement, that it performed over 200,000 inspections
12:48:27 15 in a single year, does that affect your conclusion that you just
16 stated that they have not done enough to detect and prevent
17 leaks?

18 **A** If they had done enough, there would not be leaks. 200,000
19 inspections, you figure each person can do one an hour and
12:48:45 20 there's 2,000 hours in an employee's year, that means they had a
21 hundred people working on inspections. That's at a very low
22 productivity rate of one an hour.

23 **Q** Well, when you visited the Baytown Complex for a site
24 inspection, the one we talked about in February of 2012, did you
12:49:03 25 form any impressions during that site inspection regarding the

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1 physical appearance of the plant?

2 **A** Yes, I did.

3 **Q** Did you see any rusting equipment during your visit?

4 **A** Yes.

12:49:14 5 **Q** Was there rust visible on pipes?

6 **A** Yes.

7 **Q** Was there rust visible on tanks?

8 **A** Yes.

9 **Q** Was there rust visible on any other type of surfaces?

12:49:24 10 **A** Yes.

11 **Q** Can you describe what other types of surfaces were rusting.

12 **A** I was particularly puzzled when I saw several reactors in
13 the -- and obviously, a catalytic unit that had temperature
14 sensitive paint on it. These are internally insulated to
15 protect the steel from the high temperatures inside. The steel
16 gets hot, it weakens. The high-temperature sensitive paint was
17 almost obliterated by a coat of heavy external rust.

18 And I presume the units were still in operation
19 because they weren't blocked off and tagged off and rendered
12:50:07 20 inoperable as required by OSHA. So these reactors were,
21 obviously, still in service but the temperature-sensitive paint
22 was gone. And that paint is there so that if you have an
23 internal failure of the insulation, the metal gets hot and the
24 stuff turns from green to black and says "You got a hot spot
12:50:25 25 here. You better shut this thing down and fix it before it

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1 blows out."

2 **Q** All right. Were you able to draw any conclusions regarding
3 emission events just from the physical appearance of the plant
4 as you saw it?

12:50:37 5 **A** I did.

6 **Q** What conclusion did you draw?

7 **A** I noticed on several instances the antifreeze protection on
8 the flare knockout drums was not working.

9 THE COURT: What does that mean?

12:50:54 10 THE WITNESS: It means that -- there's almost always
11 water in the bottom of a flare knockout drum. And you put steam
12 tracing on the piping and insulation so that, as water or liquid
13 builds up, you can pump it out. In this case, hey, bare pipe;
14 the insulation had been knocked off, it was gone years ago.

12:51:12 15 They weren't maintaining their heat tracing.

16 BY MR. KRATKA:

17 **Q** Did you see any evidence of water penetration on any of the
18 pipes you inspected?

19 **A** Yes. Water penetrating through the outer metal jacket into
12:51:26 20 the pipe.

21 **Q** And how could you tell that that's what you were seeing?

22 **A** Well, I see extensive rusting on the bottom of the
23 insulation jacket. I see rusting on the metal screws. Those
24 are stainless steel screws with rust coming out.

12:51:40 25 **Q** And what was the condition of the painted surfaces of the

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1 equipment that you inspected, other than that one that you just
2 mentioned?

3 **A** Generally, there wasn't any paint left. Heavy corrosion on
4 structural steel.

12:51:54 5 **Q** Let me show you -- your Honor and Mr. Bowers, if you could
6 refer to Plaintiffs' Exhibit 445 which consists of pictures that
7 were taken during the site inspection.

8 THE COURT: By who?

9 MR. KRATKA: These were -- Mr. Bowers testified that
12:52:08 10 he had requested pictures to be taken and they were taken by an
11 Exxon employee.

12 BY MR. KRATKA:

13 **Q** And if you could, turn your attention to the second-to-last
14 picture in the exhibit, which is Bate's Stamped 56372 by Exxon.

12:52:44 15 **A** Yes.

16 **Q** Okay. Do you recall where this picture was taken?

17 **A** Yes. That was taken at the infamous Booster Station 4.

18 **Q** Is this a pipe that we're looking at in the picture?

19 **A** It is.

12:52:58 20 **Q** And what are those circles on the pipes?

21 **A** I was told those circles are where they take ultrasonic
22 inspections. Every time they take one, they take it at the same
23 place to see if there's been a change.

24 **Q** And is this one of the pipes that you considered to be
12:53:14 25 rusted?

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1 **A** It has light external rust. I very carefully look at where
2 it's sitting on the concrete there, how heavy is the rust under
3 it. I would be suspicious until it was proven that it wasn't
4 rusting.

12:53:31 5 **Q** And could you -- so, those circles represent the places at
6 which ultrasonic thickness inspections were taken?

7 **A** As told by Exxon.

8 **Q** Okay. And based on the location of those circles, those
9 chalked circles, can you tell whether these inspections were
10 performed in the right places?

11 **A** In my opinion, they were not.

12 **Q** Why is that?

13 **A** I would expect any corrosion to be on the bottom of the
14 pipe where any water would be accumulating, rather than -- now,
12:53:58 15 they're correct in if it was an erosive surface that had solids
16 in it or high-velocity flow in the hydroprocessing surface where
17 you would be concerned about eroding off the protective film.
18 But this is not a high velocity pipe. You would -- it's not an
19 erosive surface.

12:54:19 20 And so, I would expect, based on my experience,
21 the corrosion to be on the bottom of the pipe. I would look at
22 it up by that concrete place which cools it. It would tend to
23 create condensation where it's touching the concrete. That's
24 where I would expect to find corrosion.

12:54:37 25 **Q** If you flip to the next page of the exhibit, the last page,

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1 Bate's Stamped 56373, is this another example of a pipe with
2 inspection -- chalk inspection circles on it?

3 **A** Yes, sir.

4 **Q** And do you know what piece of equipment this is?

12:54:55 5 **A** That's the same pipe and it shows the inspection surfaces
6 were on the side of the pipe.

7 **Q** And again, is this the place that you believe is an
8 inappropriate spot to -- for ultrasonic inspections to take
9 place?

12:55:12 10 **A** It doesn't hurt to take them there but it's not going to
11 tell you if there's corrosion. The corrosion will be on the
12 bottom of the pipe in almost all cases. Almost all. And your
13 experience should tell you if you have some on some other place
14 and then you would really worry.

12:55:31 15 **Q** Now, you mentioned before that Exxon goes longer than any
16 other company between turn-arounds at its refineries and
17 chemical plants?

18 **A** Yes, sir.

19 **Q** Do you know how long Exxon goes between shutting down
12:55:53 20 entire units for turn-arounds at the Baytown Complex?

21 **A** Not for every unit, but for some as long as ten years.

22 **Q** And in your opinion or based on your experience, is the
23 frequency of turn-arounds related in any way to the
24 effectiveness of the preventive maintenance programs?

12:56:06 25 **A** Absolutely.

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1 Q How is it related?

2 A As I say, they practice reliability-centered maintenance
3 which has the two components: change the oil in the gear box to
4 prevent wear or listen to it and "Is it doing okay?" and "Do I
5 need to take it out of service?"

12:56:23

6 The longer you go between cold inspection, take
7 the cover off and look at it, the higher the possibility of
8 catastrophic failure. You're listening to it once a month,
9 every three months, what if a gear falls tomorrow and starts
10 chewing itself up. So it's -- it's just -- parts wear. Moving
11 parts wear, no matter what you do. Unless you have an air
12 bearing -- well, even those wear. They just wear.

12:56:49

13 Q Would more frequent turn-arounds be of any use in
14 preventing leaks?

12:57:12

15 A If there was more inspection done, yes. It would probably
16 preclude some of the sudden failures that have happened,
17 suddenly apparently failures. I bring to your attention the
18 series of failures of the heat exchangers in the olefins plant,
19 the feed effluent exchangers. They seem to fail every couple of
20 years according to the records.

12:57:37

21 Q This is from Baytown's --

22 A Yes, Baytown olefins plant. And they keep failing and
23 there's a series of these exchangers and banks. I think there's
24 three or four bays of them, no valves between them. No way to
25 shut them down, shut them off and isolate them. And the

12:57:52

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1 metallurgy of the tubes that fail due to corrosion, process side
2 corrosion, haven't been changed.

3 **Q** What's the significance of the point that you just made
4 that there are no valves between banks of exchangers?

12:58:09 5 **A** They're not able to isolate a failed exchanger and repair
6 it without shutting the unit down.

7 **Q** So the design of that unit would require the entire unit to
8 shut down in order to change out a single defective piece?

9 **A** Yes.

12:58:25 10 **Q** And are there units that do have valves that allow smaller
11 sections to be isolated?

12 **A** Yes.

13 **Q** And would such a design change enable a unit to avoid
14 shutdowns?

12:58:43 15 **A** Yes.

16 **Q** And do shutdowns and restarts, typically, involve greater
17 emissions than normal operation?

18 **A** Yes.

19 **Q** So would better design in that situation be a way to avoid
12:58:55 20 emissions from emission events?

21 MR. NICHOLS: Your Honor, we're just -- he's just
22 leading. He's been doing it --

23 THE COURT: Sustained.

24 THE WITNESS: Well, in this particular --

12:59:06 25 //

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1 BY MR. KRATKA:

2 **Q** Well, no. Let me reask the question.

3 Is there any relationship between the design of
4 these heat exchange units at the olefins plant and the emission
5 of pollutants during emission events?

12:59:16

6 **A** Yes.

7 **Q** What is the relationship?

8 **A** When they're unable to determine, to isolate the exchangers
9 from the process, they have -- they know it's coming from a
10 bunch of them because it's coming out of the cooling tower. And
11 they ran for over a month with a major leak there, emissions.
12 And it's a miracle the cooling tower didn't catch fire and blow
13 up.

12:59:31

14 MR. NICHOLS: Your Honor, I'm going to object to the
15 speculation and move to strike that answer.

12:59:45

16 THE COURT: Sustained. It's struck.

17 BY MR. KRATKA:

18 **Q** Mr. Bowers, is there underground piping at the Baytown
19 Complex?

12:59:54

20 **A** There is.

21 **Q** And is there any relationship between the location of
22 piping underground and the ability to perform leak detection?

23 **A** Yes.

24 **Q** What is the relationship?

01:00:03

25 **A** It's very hard. You cannot perform external inspection on

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1 it without excavating it. And I believe it is just coming to
2 the available internal inspection tools that can be used on
3 piping.

01:00:21 4 **Q** Did you identify any emission events at the Baytown Complex
5 that were associated with leaks in underground piping?

6 **A** I did.

7 **Q** And are those outlined on Page 14 of your supplemental
8 report? That would be Exhibit 430.

9 **A** It's not 14.

01:00:39 10 **Q** 14 or 15. I may have the page wrong.

11 THE COURT: 430, you say?

12 MR. KRATKA: Yeah, Exhibit 430.

13 THE COURT: It's in that book. It's in volume, what
14 is it, 18.

01:01:04 15 MR. KRATKA: Your Honor, let me come back to that.

16 THE COURT: No, it's not.

17 MR. KRATKA: Yeah. I may have the -- I may have the
18 wrong cite there. I'll come back to that after the break.

19 BY MR. KRATKA:

01:01:19 20 **Q** In your opinion, Mr. Bowers, would reducing the amount of
21 underground piping at the Baytown Complex have any impact on the
22 number of emission events associated with piping leaks?

23 **A** Yes, sir.

24 **Q** And what impact would it have?

01:01:35 25 **A** It would reduce it.

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1 MR. KRATKA: Actually, your Honor, this may be a good
2 breaking point.

3 THE COURT: All right. Hang on one second.

4 All right. We'll see you all back here at 2:15.

01:02:00 5 (Court recessed at 1:02 p.m.)

6 (Court resumed at 2:20 p.m.)

7 THE COURT: Go right ahead, sir.

8 BY MR. KRATKA:

9 Q Mr. Bowers, I just want to go back to a couple of points
02:20:59 10 that were raised before the lunch break.

11 Do you recall when the Court asked you whether
12 you considered corrosion to be the primary cause of emission
13 events at the Baytown Complex?

14 A Yes, sir.

02:21:09 15 MR. NICHOLS: Your Honor, I'll object. The Court will
16 know what the Court asked.

17 THE COURT: I forget. It was interesting at the time.
18 Let's assume that's what I said.

19 MR. KRATKA: This is introductory. I just wanted to
02:21:21 20 know if you recalled your question.

21 BY MR. KRATKA:

22 Q When you answered that question, Mr. Bowers, did you intend
23 to say that corrosion is the primary cause of all emission
24 events at the complex?

02:21:32 25 A No.

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1 Q What emission events were you referring to as being --
2 having corrosion as a systemic cause?

3 A Those in the category of leaks.

02:21:49

4 Q And staying even within the category of leaks, did you also
5 find any evidence of any other systemic causes of leaks at the
6 Baytown Complex?

7 A Yes.

8 Q And we talked about vibration and metal fatigue. Are those
9 the types of things you're referring to?

02:22:01

10 A Yes.

11 Q And we know there are lots of leak-related emission events.
12 There were 1758 leak-related events identified at Exxon but
13 that's not even half the total of the 4,000 emission events that
14 occurred --

02:22:16

15 MR. NICHOLS: That's not only leading, that's the
16 lawyer testifying.

17 THE COURT: Sustained.

18 BY MR. KRATKA:

02:22:25

19 Q For the remaining number of emission events at the Baytown
20 Complex, other than leak-related events, did you find other
21 common underlying causes of those events?

22 A Yes.

23 Q And are those causes outlined in the various exhibits to
24 your supplemental report?

02:22:36

25 A Yes. They were covered in my supplemental report and the

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1 exhibits thereto.

2 THE COURT: Pull that mike in, sir, just a little bit.

3 THE WITNESS: Thank you, sir.

4 BY MR. KRATKA:

02:22:46 5 Q Now, you also testified earlier that Exxon does not know
6 what the consequences of an emissions event will be before it
7 happens.

8 Do you recall that?

9 A I'm not sure I said it exactly that way. I say no one
02:23:02 10 knows, not just Exxon. You can't walk around saying, "It's
11 gonna leak there. It's going to be a small leak."

12 Q So just as an engineering matter, that is --

13 A This is an engineering matter. It's not possible to
14 predict in advance that a given leak is going to remain small or
02:23:17 15 start small.

16 THE COURT: Can you pull that mike in a little more?

17 THE WITNESS: I apologize, sir.

18 THE COURT: I know. You're a little lower today. So
19 am I. The chair doesn't move, you can't pull it in.

02:23:27 20 THE WITNESS: No, I know. I've noticed that, sir.
21 You can't steal it.

22 BY MR. KRATKA:

23 Q Now, you're here testifying as an expert so I'm going to
24 ask you a hypothetical question: All else being equal, if the
02:23:39 25 overall frequency of emission events -- so now we're just

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1 talking about the frequency with which emission events occur.
2 All else being equal, if the frequency of emission events is
3 reduced, would that likely have any impact on the probability of
4 a large emission event occurring?

02:23:57

5 MR. NICHOLS: Objection, your Honor. That's pure
6 speculation unless there's some foundation that can be shown for
7 it, some scientific foundation for some type -- some of that
8 type of analysis.

9 THE COURT: Hang on.

02:24:10

10 See if you can rephrase it.

11 BY MR. KRATKA:

12 Q Does the frequency with which an emissions event occurs, in
13 other words the -- well, let me rephrase that.

02:24:31

14 MR. NICHOLS: Your Honor, I'll have no object -- if he
15 wants to refer to see treatise or something where the principle
16 would be evident, then I have -- I'll have no objection.

17 THE COURT: Gotcha.

18 MR. NICHOLS: The question as phrased was --

19 MR. KRATKA: I'll move on.

02:24:53

20 BY MR. KRATKA:

21 Q Now, in your testimony just before the lunch break, you
22 were describing an emission event involving a heat exchanger at
23 the olefins plant. Do you recall that?

24 A Yes.

02:25:02

25 Q And if you take a look at Page 13 of your initial report,

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1 Plaintiffs' Exhibit 427 --

2 **A** What page, sir?

3 **Q** Page 13 of your initial report, Plaintiffs' Exhibit 427.

4 Yeah. There's a large paragraph number 4 there. I just want to
02:25:39 5 identify the particular event you were describing.

6 Is this event -- STEERS Number 68364, is that the
7 event you were referring to earlier?

8 **A** Yes. Yes, that's the one.

9 **Q** Thank you.

02:25:58 10 Now, turn to page -- excuse me.

11 Turn to Exhibit 438, Plaintiffs' Exhibit 438.

12 **A** Yes, sir.

13 **Q** Can you tell the Court what -- this is one of the tables
14 attached to your supplemental report?

02:26:31 15 **A** Yes.

16 **Q** And can you explain to the Court what this table is.

17 **A** Well, the -- the chart shows the frequency of the
18 occurrence of fires by Exxon's classification. How many fires
19 were there?

02:26:48 20 **Q** You mean emission events involving fires?

21 **A** Yes. Yes, emission events involving fires, including
22 smoldering board.

23 **Q** And how many emission events has Exxon reported at the
24 Baytown Complex that involved fires?

02:27:03 25 **A** 353 were classified by them as fires.

Bowers - Direct/Kratka

1 Q Now, have you drawn any conclusions regarding the number of
2 emission events at the Baytown Complex involving fires?

3 A That's an awful lot. In my seven years at Texaco, we had
4 probably -- well, this is not really apples and apples. If the
02:27:28 5 fire department had to leave their work to report to a fire
6 twice a month, that was a lot. That was a lot and they
7 responded to everything that was more than throw a bucket of
8 sand on it.

9 Q And how many fires per month are shown on your chart there,
02:27:48 10 on Exhibit 438, first page?

11 A I'm trying to remember how many per month it is, but it's a
12 lot. 353 in how many months? That would be ten a month.

13 Q If you refer -- I think if you refer to Page 1 of the
14 exhibit, there's a chart showing the number of fires in a month.
02:28:13 15 Is it on your version?

16 A I don't see that in here. Okay. Yes, there's a graph
17 there.

18 Q I'm sorry. I said chart. I should have said graph.
19 And that shows as many as 11 fires per month?

02:28:32 20 A Yes. I think elsewhere I've written something like 3.58.

21 Q On an average?

22 A On an average. And it's gone up year by year.

23 Q And is the -- again, what is the significance of having
24 fires burning at a refinery or a chemical plant?

02:28:54 25 A The second commandment in refining is thou shalt not have

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1 fires. The first one is thou shalt not have leaks. Because
2 without a leak, you can't have a fire. And a fire is extremely
3 uncontrollable and unpredictable. It could be a small fire that
4 starts small and very rapidly grow to a very large
02:29:20 5 conflagration, I mean, in a matter of seconds.

6 Q So as a matter of good engineering practice, should there
7 be as few fires as possible?

8 A That is correct.

9 Q Turn to -- now to your Plaintiffs' Exhibit 437, which is
02:29:36 10 Exhibit 8 to your supplemental report.

11 A Yes, sir.

12 Q And can you tell the judge what this exhibit contains?

13 A This exhibit lists the emission events involving
14 compressors.

02:30:06 15 Q And do you recall --

16 THE COURT: What period of time?

17 THE WITNESS: This involves from 2005, from the start
18 of the -- to the end.

19 THE COURT: To what?

02:30:13 20 THE WITNESS: September of 2013, if I would remember.

21 THE COURT: Okay.

22 MR. KRATKA: Yeah, looks like the top line of the
23 exhibit describes the time period covered.

24 THE COURT: All right.

02:30:25 25 //

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1 BY MR. KRATKA:

2 Q And how many emission events involving compressors occurred
3 over that time period at the Baytown Complex?

02:30:39

4 A 316 were classified as compressor-related by Exxon,
5 precip -- it was caused by something in the compressor failing.

6 Q Now, what significance do compressor trip -- what is a --
7 first of all, what is a compressor trip?

02:31:00

8 A The -- the term "trip" means it's an automatic shutdown.
9 Could be caused by electrical or mechanical or exceeding
10 pressure or temperature and it's been set in the control system.
11 It turns the electricity on and off. So a -- it's a -- if you
12 reach this limit, shut it off.

13 Q Is that a safety measure?

14 A Yes. It is an equipment and safety measure.

02:31:18

15 Q And what significance do compressor trips or other types of
16 compressor failures have at a refinery or chemical plant?

02:31:38

17 A Essentially, all the time when a compressor on a process
18 unit trips or shuts down unexpectedly, it leads to flaring
19 because the unit is hot. It is pressurized. You've been moving
20 gas from a low pressure to a high pressure and all of a sudden
21 you can't do it.

22 THE COURT: Well, does every compressor have a flare?
23 Because we're told -- we've been told -- how many are out there,
24 24? Something like that?

02:31:47

25 THE WITNESS: Yes.

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1 MR. KRATKA: 145 -- 26 flares at the complex and I
2 think we were told yesterday 145 compressors.

3 BY MR. KRATKA:

4 Q Did you hear that, Mr. Bowers?

02:31:56 5 A I don't remember that number, but it's --

6 THE COURT: So 145 compressors, is that the number?
7 Anybody?

8 MR. NICHOLS: I believe -- I believe it was. We'll go
9 back to the --

02:32:03 10 MR. ALEXANDER: 146, your Honor.

11 THE COURT: And if there are 300-some-odd violations,
12 that's about what? Average about two a year per compressor?

13 THE WITNESS: Yes, sir.

14 THE COURT: About how many years -- what's the exact
02:32:19 15 year span --

16 MR. KRATKA: About eight -- just about eight.

17 MR. NICHOLS: About eight.

18 THE COURT: Eight years. Okay. So a little more than
19 that.

02:32:25 20 Go on.

21 THE WITNESS: And -- and you asked the question
22 where -- is every compressor connected to a flare? It is
23 through the flare relief piping on the unit, yes.

24 THE COURT: All right.

02:32:34 25 //

Bowers - Direct/Kratka

1 BY MR. KRATKA:

2 Q There may be one -- more than one compressor associated
3 with a particular flare?

4 A Yes. There may be more than one compressor on every unit
5 that has compressors.

02:32:42

6 Q Okay. And why did you decide to use compressors, that type
7 of equipment, as a common factor among emission events at the
8 Baytown Complex?

9 A Because there were a lot of them in -- caused by that
10 category of equipment and it's one on which Exxon touts its
11 expertise in increasing the reliability thereof.

02:33:00

12 Q And by increasing reliability, you mean increasing the --
13 increasing the amount of time that they can run before being
14 shut down for repairs or other work?

15 A Decreasing the frequency with which they have to be shut
16 down prematurely through their planned maintenance.

02:33:18

17 Q Aren't there many different types of things that can cause
18 a compressor to trip or fail?

19 A Yes.

20 Q Can compressors trip for reasons unrelated to the
21 compressor itself?

02:33:37

22 A Yes.

23 Q Given that, why did you think it made sense to use
24 compressors as a category for examining the causes of emission
25 events?

02:33:53

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1 **A** In reading the paperwork that Exxon provided, I found that
2 the majority of the compressor trips was not contained within
3 the compressor, the mechanical -- direct mechanicals, but the
4 axillaries, the lube oil systems, the seal oil systems, the
02:34:19 5 power supply to it, all the stuff that's essential to keeping
6 the heart beating. And it indicates to me that that stuff was
7 wearing out before the plant turn-arounds. The predictive
8 maintenance was not catching or evaluating the ancillary
9 equipment conditions.

02:34:42 10 **Q** So looking at the compressors led you to a deeper level of
11 analysis?

12 **A** Yes, sir.

13 **Q** And were you able to draw any conclusions regarding
14 preventive maintenance and compressors by analyzing

02:34:59 15 compressor-related emission events? I apologize you may have
16 just answered that question.

17 **A** Yes.

18 THE COURT: "Yes," what?

19 THE WITNESS: Yes, it drove me to the conclusion they
02:35:07 20 were not being maintained frequently enough and not looked at
21 deep enough under their predictive maintenance program.

22 BY MR. KRATKA:

23 **Q** Now, the Court asked you about the relationship between
24 compressors and flares. What is the significance of -- are you
02:35:26 25 familiar with --

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1 MR. KRATKA: Well, strike that.

2 BY MR. KRATKA:

3 Q Are you familiar with the term "flare gas recovery
4 capacity"?

02:35:33 5 A Yes.

6 Q What does that term mean?

7 A It is used to quantify the ability to recover the gas that
8 a unit may put into the flare system for disposal for
9 emergency -- emergency conditions or bleeding down for a
02:35:53 10 shutdown. This compressor sucks it out of that, essentially,
11 atmospheric pressure pipe that leads to the flare and recovers
12 it back into the refinery for use as fuel gas or --

13 Q So does having flare gas recovery capacity enable a plant
14 to avoid flaring?

02:36:14 15 THE COURT: Hold it. State the question again.

16 BY MR. KRATKA:

17 Q Does having sufficient flare gas recovery capacity enable a
18 plant to avoid or reduce flaring events?

19 A Yes.

02:36:28 20 Q And what role do compressors play in flare gas recovery
21 capacity?

22 A They are the prime piece of equipment that takes the low
23 pressure gas in the flare header system and boosts it to a
24 higher pressure where it can be reused in the refinery.

02:36:46 25 Q And I note that in your initial report in this case --

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1 which was from March, 2012; is that right?

2 **A** I believe that's correct, yes.

3 **Q** -- did you offer a specific recommendation regarding
4 flare gas -- additional flare gas recovery compressors at the
02:37:05 5 Baytown Complex?

6 **A** I did.

7 **Q** And basically, what did you recommend?

8 **A** I recommended that they install two additional flare gas
9 recovery compressors at the best location in their system so
02:37:16 10 that if one of the compressors was out of service for
11 maintenance or failure, they still would have enough capacity to
12 prevent most flaring.

13 THE COURT: So just add two to the whole complex?

14 THE WITNESS: I believe that was what I recommended,
02:37:35 15 sir. It was -- they have a couple that are not too reliable and
16 that leads to -- it was literally hundreds of times when the
17 flaring would have been eliminated completely.

18 THE COURT: So no flame at all going out to the
19 community?

02:37:50 20 THE WITNESS: Correct.

21 BY MR. KRATKA:

22 **Q** Let me show you a document that we received shortly before
23 trial, actually, from Exxon. This is Plaintiffs' Exhibit 605.

24 MR. KRATKA: Pull out another --

02:38:34 25 THE COURT: I got one. I'm looking at it up here or

Bowers - Voir Dire/Nichols

1 you can put it on the --

2 MR. KRATKA: I'll put it on the -- yes.

3 BY MR. KRATKA:

02:39:04

4 Q Now this is a document produced by Exxon in discovery, as
5 you can see from the Bate's number at the bottom right of the
6 page. And have you seen this document before, Mr. Bowers?

7 A I have not. Not to my knowledge. It doesn't look
8 familiar.

02:39:21

9 MR. NICHOLS: Your Honor, may I take the witness on
10 voir dire.

11 VOIR DIRE EXAMINATION

12 BY MR. NICHOLS:

13 Q Is there a date that appears at the top of the page?

14 A It says 5-10-12, but that doesn't mean that I got it then.

02:39:30

15 Q I -- I --

16 MR. KRATKA: You know what, I'm mixing this up with
17 another document.

18 MR. NICHOLS: Okay.

02:39:35

19 MR. KRATKA: This was produced -- you're absolutely
20 right, Mr. Nichols. This was produced -- I don't think it was
21 produced to us on this date, but this document was produced
22 earlier.

23 THE COURT: All right. What is it?

24 //

02:39:41

25 //

Bowers - Direct/Kratka

1 DIRECT EXAMINATION

2 (continued)

3 BY MR. KRATKA:

4 **Q** You haven't seen it, Mr. Bowers?

02:39:43 5 **A** I don't recall it.

6 **Q** All right. I'm going to -- I'm going to take this back,
7 then, and ask another question.

8 Did you estimate the capital cost of installing
9 those two additional compressor installations that you
02:40:14 10 recommend?

11 **A** I did. I provided, in my report, an, I think, order of
12 magnitude estimate of the cost.

13 THE COURT: What -- what was it?

14 THE WITNESS: I'll have to look and see, your Honor.

02:40:25 15 BY MR. KRATKA:

16 **Q** I believe it's on Page 20 of your initial report which is
17 Exhibit 427.

18 **A** I stated in that report in the range of \$50 million.

19 MR. NICHOLS: 50?

02:40:56 20 THE COURT: 50 million?

21 THE WITNESS: 50 million.

22 THE COURT: For the two compressors?

23 THE WITNESS: Two compressors, including the power
24 stations and all the piping.

02:41:01 25 THE COURT: Do they have to have their own power

Bowers - Direct/Kratka

1 stations?

2 THE WITNESS: No, it's -- it's transformer. You got
3 to run an electric -- an extension cord to them. These would be
4 3- to 400 horsepower compressors or however they need to be.

02:41:14 5 THE COURT: So 25 million each?

6 THE WITNESS: Yes, sir. And that should be more than
7 adequate.

8 BY MR. KRATKA:

9 Q Are you familiar with a -- with what an operator simulator
02:41:33 10 is in terms of --

11 A Yes.

12 Q And what is -- what is a simulator?

13 A An operator simulator, in this context, is a computer
14 program that faithfully replicates how the plant behaves or
02:41:49 15 would behave in either a steady state or a transient operation.

16 THE COURT: What does that mean?

17 THE WITNESS: It means it models what happens. It
18 shows you what happens to this vessel, this pressure, this
19 limit.

02:42:00 20 BY MR. KRATKA:

21 Q Is it analogous to a, say, flight simulator for an airline
22 pilot?

23 A Very similar to a flight simulator.

24 THE COURT: Well, you used a computer. Does a
02:42:08 25 computer run -- do you sit in a room or is it just on a screen?

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1 THE WITNESS: It replicates what reality is, what you
2 have in the -- in the operating room. It's supposed to show all
3 the consoles, all the circuits, all the pumps; and it's supposed
4 to faithfully replicate, as if the -- as if you were connected
5 to the plant.

02:42:25

6 THE COURT: Is it fully operated by keyboard? Or do
7 you actually go out and punch things or do you turn knobs?

8 THE WITNESS: In the real --

9 THE COURT: In the simulator.

02:42:33

10 THE WITNESS: In the real world, if you're required to
11 punch a button or turn a knob, the simulator should have the
12 same requirements.

13 THE COURT: Okay.

14 BY MR. KRATKA:

02:42:43

15 Q And we heard yesterday that the -- in an enforcement order,
16 the Texas Commission on Environmental Quality required Exxon to
17 install simulators at the -- for operators at the olefins plant.

18 Now, can simulators play any role in preventing
19 emission events?

02:43:04

20 A Yes.

21 Q And do they do that by preventing human error or reducing
22 the likelihood of human error?

23 A They reduce human -- the likelihood -- it helps train the
24 operators on how to better operate the plant, both in normal
25 conditions and when things go wrong.

02:43:19

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1 THE COURT: Mr. Kratka, you say that the state agency
2 ordered a new compressor somewhere?

3 MR. KRATKA: Not a compressor, a simulator -- one of
4 these simulators to be put in at the olefins plant.

02:43:34 5 THE COURT: Was that put in?

6 MR. KRATKA: I don't know whether it's actually been
7 put in yet.

8 BY MR. KRATKA:

9 Q In fact, my question to Mr. Bowers is. This order came out
02:43:44 10 in the year 2012. Are simulators a new type of technology in
11 the olefins production industry?

12 A No, sir.

13 Q How long have they been around?

14 A A couple of decades.

02:43:58 15 THE COURT: What do they cost? Ballpark.

16 THE WITNESS: 20 million, 30 million. They're not
17 inexpensive. It's a lot of work.

18 THE COURT: Okay. So the state agency did order that
19 one. Did they ever produce -- was it ever put online?

02:44:15 20 MR. KRATKA: That will be a question for an Exxon
21 employee.

22 THE COURT: Was it put online?

23 MR. ALEXANDER: Yes, sir, your Honor.

24 THE WITNESS: Okay. Good. Thank you.

02:44:22 25 //

Bowers - Direct/Kratka

1 BY MR. KRATKA:

2 Q Since this technology has been around for 20 years, such a
3 simulator could have been voluntarily put in place by Exxon
4 years earlier, right?

02:44:30 5 MR. NICHOLS: Objection. He's speculating.

6 THE COURT: Sustained.

7 BY MR. KRATKA:

8 Q Was there -- was there any -- was there --

9 THE COURT: Wait a second. I guess they could have if
02:44:36 10 it was around.

11 BY MR. KRATKA:

12 Q -- was there any technological barrier to Exxon having
13 installed the simulator or simulators earlier?

14 A None.

02:44:46 15 Q Thank you.

16 Let me turn to another one of the tables attached
17 to your revised supplemental report.

18 THE COURT: By the way, you stated that you went
19 through about 20,000 documents, correct?

02:44:56 20 THE WITNESS: Yes, sir.

21 THE COURT: Okay.

22 BY MR. KRATKA:

23 Q Plaintiffs' Exhibit 439. In this exhibit, did you
24 categorize emission events by mechanical -- by the type of
02:45:16 25 mechanical failure involved?

Bowers - Direct/Kratka

1 **A** Yes.

2 **Q** And can you just maybe quickly run down the list of the
3 types of categories that were created of mechanic -- of repeated
4 mechanical failures?

02:45:26 5 **A** There were electrical failures, flange failures. Furnaces,
6 gasket leaks, seals on pumps, valves, and I called it others.

7 **Q** Miscellaneous?

8 **A** Miscellaneous.

9 **Q** And in all --

02:45:46 10 THE COURT: It states here 283 valve failures.
11 There's some testimony that they have maybe a million valves out
12 there. How do you bring that down by -- as you stated before,
13 by inspections, more intensive inspections?

14 THE WITNESS: More intensive inspection and
02:46:04 15 maintenance.

16 BY MR. KRATKA:

17 **Q** And those 283 valve failures, that was just at the
18 refinery, correct?

19 **A** Yes.

02:46:10 20 **Q** And there were also additional valve failures at the
21 olefins plant?

22 **A** Yes.

23 **Q** Another 122?

24 **A** Yes.

02:46:18 25 **Q** And another 107 valve failures at the chemical plant?

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1 **A** Yes.

2 **Q** Now, we've been talking a little bit -- maybe more than a
3 little bit in this case -- about acts of God. Weather events
4 are often described as acts of God.

02:46:43 5 Can emission events caused by weather such as
6 cold weather be -- are they unforeseeable or can they be
7 prevented?

8 **A** Well, they can be prevented.

9 **Q** How can cold weather-related emission events be prevented?

02:46:56 10 **A** Exxon's own design standards -- is that me?

11 Exxon's own design standards require the plant to
12 be built and maintained such that it can operate at any of the
13 climatic conditions found at the site location. Now, a cold
14 weather event is something that predictably happens. It's not
02:47:18 15 every year it gets to seven degrees or twelve degrees but it's
16 every decade at least. And so it would be part of the required
17 design of the Baytown facility.

18 **Q** And in Plaintiffs' Exhibit 444, on another one of your
19 supplemental report tables, do you list the emission events that
02:47:42 20 were caused by -- that Exxon attributed to cold weather as the
21 cause?

22 **A** Yes, sir.

23 **Q** How many of those were there?

24 **A** There were 21. 21 identified.

02:47:58 25 **Q** And the -- in your opinion, with proper measures --

Bowers - Direct/Kratka

1 planning measures taken, could those emission events have been
2 avoided?

3 **A** Yes. They had -- if there was heat tracing or freeze
4 prevention designed, it should be operational before freezing
02:48:14 5 conditions happen in the winter.

6 THE COURT: What do you think, cost-wise, that it
7 would be to the -- to the whole plant out there to get
8 everything up to what you think it ought to be?

9 THE WITNESS: In terms of freeze protection?

02:48:25 10 THE COURT: No, everything. In other words, you're
11 identifying a number of different things. I'm not cutting you
12 off, certainly go through it.

13 THE WITNESS: No, sir.

14 THE COURT: How much would Exxon have to expend to get
02:48:35 15 it up to speed?

16 THE WITNESS: This is in total.

17 THE COURT: That's correct.

18 BY MR. KRATKA:

19 **Q** Can we -- should we break it down? We have it broken down.

02:48:44 20 THE COURT: All right. Tell me. You tell me what's
21 the gross amount. It's your -- the Plaintiffs' position is how
22 much?

23 MR. KRATKA: The Plaintiffs' position, Mr. Bowers has
24 already told you about operation and maintenance costs --

02:48:51 25 THE COURT: Exactly.

Bowers - Direct/Kratka

1 MR. KRATKA: -- 90 million dollar -- 90 million dollar
2 annual increase.

3 THE COURT: Right.

4 MR. KRATKA: And he's identified several capital
02:49:03 5 improved -- design improvements. One would be the two
6 compressors that he talked about that cost 50 million.

7 THE COURT: 50 million. Another 20 for a simulator.
8 Well, what's the total? Give me a ballpark.

9 MR. KRATKA: I'm just -- I'm -- he also recommended an
02:49:19 10 additional sulfur recovery unit and associated equipment. I'm
11 just --

12 THE WITNESS: I think that was around 200.

13 THE COURT: 200 million?

14 MR. KRATKA: Let me see. I think --

02:49:29 15 THE WITNESS: About a billion dollars.

16 THE COURT: About a billion?

17 THE WITNESS: About a billion. Not spent at once.

18 THE COURT: There is testimony that this -- that this
19 refinery initially was built -- what is it? In 1909, I think,
02:49:38 20 construction started on it.

21 THE WITNESS: It's got some years on it.

22 (Discussion off the record.)

23 THE COURT: I have a ballpark figure. That's all
24 right.

02:49:56 25 Go back to your sequence.

Bowers - Direct/Kratka

1 BY MR. KRATKA:

2 Q Now, there's been a lot of discussion specifically about
3 hurricanes. In your estimation, can emissions from a full plant
4 startup after a hurricane be minimized beyond what Exxon has
02:50:21 5 done in this case?

6 A Yes.

7 Q And how would that be done?

8 A Well, starting up a complete plant without emissions, it's
9 careful planning and sequencing to start up of the different
02:50:35 10 units so they don't cause emissions to the atmosphere.

11 THE COURT: How long was the shutdown from Hurricane
12 Ike? Do you remember how many days?

13 MR. KRATKA: The length of the shutdown?

14 THE COURT: Yeah.

02:50:45 15 THE WITNESS: A little over two weeks, if I remember
16 right.

17 MR. NICHOLS: That's, basically, right. It was,
18 basically, from --

19 THE COURT: Two weeks to get it back online?

02:50:53 20 MR. NICHOLS: Hurricane Ike was -- made landfall on
21 September 13, 2008, your Honor. So it was during a time period
22 of early September through early October.

23 MR. ALEXANDER: About three weeks, your Honor.

24 THE COURT: All right. Thank you.

02:51:05 25 //

Bowers - Direct/Kratka

1 BY MR. KRATKA:

2 Q Now, another breakdown that you did of emission events, as
3 you testified earlier, was to categorize them by unit, correct?

4 A Yes.

02:51:24 5 Q And --

6 A I didn't categorize, they did. I just assembled the table.

7 Q They did. But could you -- you identified particular units
8 where you considered there to be an unusual number of emission
9 events; is that fair to say?

02:51:36 10 A They stood out above the crowd.

11 MR. KRATKA: And I'm just -- I'm not going to go
12 through all of these, your Honor, because there are more than, I
13 think, any of us have the patience to go through. But --

14 THE COURT: Well, that's what I do for a living. You
02:51:49 15 guys are on the meter.

16 MR. KRATKA: Sure. Well, that's right.

17 THE COURT: As well as my timer.

18 MR. KRATKA: Forget about patience, I'm thinking about
19 the timer. Let me -- well, let me pull out a few examples. But
02:52:01 20 as we said, these are all contained in the exhibits to
21 Mr. Bowers' revised supplemental report which is Plaintiffs'
22 Exhibit 430.

23 BY MR. KRATKA:

24 Q If you turn to Plaintiffs' Exhibit 433, which covers units
02:52:16 25 at the refinery, and this is Exhibit 4 of your report, so the

Bowers - Direct/Kratka

1 pages are numbered 4-1, 4-2. If you would, turn to page 4-15 of
2 this exhibit -- I'm sorry, 4-17 of this exhibit.

3 **A** I'm there.

4 **Q** All right. And now, this part of the -- you go through a
5 number of different units at the refinery and totaled up the
6 events that occurred at each one, correct?

7 **A** Yes, sir. We looked at every unit.

8 **Q** And certain of them were included in this table?

9 **A** Yes.

10 **Q** And now, on this page, we're looking at -- specifically at
11 the flexicoker unit which we've heard some discussion about.

12 **A** Yes.

13 **Q** And how many emission events occurred just at the
14 flexicoker unit during the period covered by this lawsuit?

15 **A** 113.

16 **Q** And how many of those were STEERS events?

17 THE COURT: It says right here 23.

18 THE WITNESS: 23. I'm just getting old.

19 THE COURT: I got -- probably got years on you.

20 THE WITNESS: I think you do, your Honor, you were
21 here when Myron Love was here.

22 THE COURT: Oh, state court.

23 THE WITNESS: Yeah. He married my wife and I 25 years
24 ago in June.

25 //

Bowers - Direct/Kratka

1 BY MR. KRATKA:

2 **Q** Congratulations.

3 Meanwhile, back to flexicokers. What -- very
4 briefly, what is a flexicoker?

02:54:11 5 **A** Let's see if I can do it simply. A flexicoker is a unit
6 that takes a heavy hydrocarbon, such as tar or very heavy oil,
7 and uses small particles of coke, like small BBs, very small
8 BBs, circulating. You spray the heavy oil onto the circulating
9 bed of the small particles where it cracks.

02:54:37 10 THE COURT: You mean the molecular structure cracks?

11 THE WITNESS: Yes, sir. It destroys it from the heat.
12 These are thousands degrees and this stuff is finer than sand.
13 It's 20 to 50 microns. They're little beads of -- beads of
14 coke. And we lay down another layer on it and then we circulate
02:54:53 15 through gravity and a lift pipe a portion of that total amount
16 into a regenerator where we burn off that extra layer of coke.

17 THE COURT: Into the air or --

18 THE WITNESS: No.

19 THE COURT: It's captured?

02:55:10 20 THE WITNESS: It's captured and goes to -- then goes
21 to either a gasifier where -- where you convert it to carbon
22 monoxide, water and steam. You make useful energy out of it.
23 You recover the energy value in it. CO emissions will be
24 abnormal. It's a mechanically-complicated unit and it's very
02:55:37 25 temperamental process-wise. But it does an effective job.

Bowers - Direct/Kratka

1 Flexicoker -- there's a fluid coker which produces, as a
2 product, the real fine coke. And a flexicoker turns all that
3 coke product into fuel gas.

4 BY MR. KRATKA:

02:55:54 5 **Q** And do you consider 113 emission events over eight years to
6 be a normal number of emission events at such a unit?

7 MR. NICHOLS: Your Honor, can we have a frame of
8 reference. Normal as to what?

9 BY MR. KRATKA:

02:56:08 10 **Q** Is it -- would you expect there to be any proper -- for a
11 properly operated and maintained flexicoker unit, would you
12 expect there to be 113 emission events there over eight years?

13 MR. NICHOLS: Same objection, your Honor. In the
14 abstract, there's no frame of reference for the Court. But if
02:56:28 15 the Court understands, then I'll withdraw the objection.

16 THE COURT: I don't know if I understand it, but I'm
17 going to -- I'll overrule the objection. Let's see what he
18 says.

19 Go ahead and answer.

02:56:35 20 THE WITNESS: Well, for that flexicoker, in its
21 present condition, that's probably okay.

22 BY MR. KRATKA:

23 **Q** Why is that?

24 **A** Well, it's not in very good condition.

02:56:43 25 THE COURT: Now, the next thing is what happens if it

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1 was in good condition? What would the --

2 THE WITNESS: There are operators that have much lower
3 rate of emission events from those units.

4 BY MR. KRATKA:

02:56:53 5 Q At other refineries?

6 A Yes, some Exxon.

7 Q And was the flexicoker unit one of those that you visually
8 expected or took a look at?

9 A Yes. We went by the flexicoker, walked by it.

02:57:07 10 Q What was your impression from the visual view of it?

11 A It's not good.

12 Q In what way?

13 A The waste heat boiler, the steel shell was cracked all
14 over. It was -- I'd say there was a crack in the steel shell
02:57:26 15 that was being repaired by a welder and there was no more than
16 three feet between any two cracks. And that ran in all
17 directions on that entire wall of the furnace that was visible.

18 Q And how large is that shell?

19 A 20 feet high by 40 feet long.

02:57:47 20 Q And there were cracks every three feet?

21 A Yes, sir.

22 Q As far as you could tell?

23 A Crisscrossing every which ways.

24 Q What conclusion do you draw from that situation?

02:57:57 25 A Something was wrong. What caused the cracking? Frequent

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1 start up and shut down because of something and just thermal
2 expansion and it hadn't been replaced. I would have replaced
3 the whole sheet steel because it, obviously, was very severely
4 heat stressed and badly damaged. And a weld repair, you know,
02:58:22 5 that's not even a decent band-aid on a situation like that.

6 **Q** All right. Let's turn to page 4-1 of this exhibit. We're
7 still at the refinery and this part of the exhibit deals with
8 what you earlier termed the infamous Booster Station 4.

9 Can you explain to the Court why you gave it that
02:58:45 10 description.

11 **A** Booster Station 4. That function of flare gas recovery
12 seemed to be very unreliable. It was failing for one reason or
13 another. Belts were breaking right after they were put on.
14 Compressors failed after they were overhauled, power supply
02:59:10 15 failure -- the list goes on and on. It just seemed to be
16 extremely unreliable.

17 **Q** And you say in your table here that there were 49 emission
18 events?

19 **A** That's direct emission events. That's not compressor
02:59:22 20 failures. There is a spare compressor there, but there were 49
21 times that we identified where neither were working.

22 **Q** That's when neither of the two compressors --

23 **A** Yes. Yes.

24 **Q** And you viewed Booster Station 4 personally?

02:59:40 25 **A** Yes, sir. Yes.

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1 Q And did you notice anything of concern there during your
2 visit?

3 A Yes.

4 Q What did you notice that was -- that concerned you?

02:59:57 5 A It was very old. There was -- it was just in poor repair.

6 Q Did you notice any odor when you were there?

7 A There was a slight odor of hydrocarbon leaking from the rod
8 seals as a (indicating) and so it -- there was definitely
9 leaking some hydrocarbon gas. Minor amount, I would call it, at
03:00:22 10 that moment in time.

11 Q Now, again, there -- you've gone through each of the three
12 plants, the chemical plant, the olefins plant, and the refinery,
13 and gone through assembled tables like these for the numerous
14 units of each one, correct?

03:00:39 15 A Yes, sir.

16 Q Okay. I'm not going to walk you through each of those, but
17 I do want to direct your attention to a specific emissions event
18 that has been discussed earlier in this trial. I'm going to
19 hand you Plaintiffs' Exhibit 2A, which is the -- one of the
03:00:57 20 stipulated tables.

21 MR. KRATKA: It might be easier to put it on the
22 screen.

23 BY MR. KRATKA:

24 Q So directing your attention to -- this is STEERS number
03:01:47 25 120401 on Page 51 of Plaintiffs' Exhibit 2C. And this emission

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1 event occurred on February 21, 2009.

2 Do you see that?

3 **A** Yes.

4 **Q** And this event occurred at the Hydrocracking Unit 1?

03:02:08

5 **A** Yes.

6 **Q** And the cause of this emission event, can you just read
7 that for the Court, if you're able to.

8 **A** It says, "The valve leaked into the atmospheric drums, D401
9 and D902."

03:02:29

10 And those are at Booster Station 4, if I remember
11 right.

12 **Q** All right.

13 **A** I can't swear to that, but I think that's where they are.

14 **Q** And what I specifically want to ask you about is the

03:02:44

15 pollutants released during this event would include propane and
16 hydrogen sulfide?

17 **A** That, as identified by Exxon, yes.

18 **Q** Is it surprising to see both propane and hydrogen sulfide
19 released in the same event?

03:03:00

20 **A** No, sir. That's to be expected unless they have been
21 previously separated. Propane and hydrogen sulfide have --
22 propylene -- have the same boiling point. They boil at the same
23 temperature. So propane, slash, propylene and hydrogen sulfide
24 are double first cousins, brother and sister. Their molecular
03:03:21 25 weight is such that they distill at the same time. And you have

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1 to chemically separate them. You can't separate them by
2 distillation.

3 **Q** So you would actually expect to see if one is released from
4 an event like that --

03:03:35 5 **A** In that area of the refinery from the cat cracking units,
6 oh, absolutely. Any hydrocarbons produced by the cat cracker
7 are going to be full of sulfur. So, yes.

8 **Q** And do you expect those compounds to be released together?

9 **A** Yes.

03:03:51 10 **Q** Okay. Now, Mr. Bowers, you've said that you've reviewed
11 deviation reports in your preparation of your opinion in this
12 case, the Title V deviation reports.

13 Do you consider it important or not important, as
14 an engineer, that a refinery or a chemical plant perform

03:04:09 15 regulatory-required inspections in a timely manner?

16 **A** I have two ways to answer that. One concerns physical
17 operation at the refinery. 30 days late on a report is not
18 going to cause something to blow up. However, the practice of
19 not following those requirements indicates lax operations which
03:04:45 20 will lead to bad things happening. That's been well shown many
21 times. So I consider it a big deal.

22 **Q** And is your opinion the same with regard to compliance with
23 reporting and monitoring requirements of these plants?

24 **A** Yes, sir. It's a requirement of their permit. They should
03:05:05 25 do it.

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1 Q Do you consider it good practice for a refinery to allow
2 open-ended lines to persist?

3 A No.

4 Q Why not?

03:05:12 5 A Well, for one thing, it's a violation of their permits.

6 Q But as an engineer?

7 A As an engineer, I don't like them because valves will
8 sometimes leak. And if you leave a line open long enough, a
9 wasp or something is going to crawl into it and make a nest. Or
03:05:34 10 in this case, out there they've shown that a bird will nest in
11 it and cause corrosion and failure.

12 Q Literally a bird?

13 A Yes. A bird nest.

14 Q Okay.

03:05:44 15 A We have wrens that get into the dryer ducts in Bellaire.
16 You know, open the flap door and get in.

17 Q All right. Now, Mr. Bowers, we've gone at length through
18 your analysis of various causes of emission events and types of
19 equipment involved in emission events and units involved in
03:06:03 20 emission events.

21 Are you able to reach a conclusion as to whether
22 emission events at the Baytown Complex have arisen from the same
23 inadequately-corrected sources of trouble?

24 A Yes. They are repetitive, same root cause. It may have a
03:06:19 25 different punctuation mark, but it's the same root cause.

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1 That's the inadequate maintenance.

2 **Q** And Mr. Bowers, are you aware that there's a Texas
3 regulation that provides an affirmative defense to penalties for
4 certain unauthorized emissions resulting from emission events?

03:06:39 5 **A** Yes, sir.

6 **Q** Have you read that regulation?

7 **A** I have.

8 **Q** This is a copy of Texas Administrative Code -- 30 Texas
9 Administrative Code, 101.222. I think we may have seen this
03:07:20 10 before but is this the affirmative defense regulation that
11 you've seen?

12 **A** It appears to be.

13 **Q** And we heard from Mr. Kovacs that there are -- yesterday
14 that there are 11 different criteria under the affirmative
03:07:38 15 defense regulation?

16 **A** That is my understanding.

17 **Q** And do you know whether or not the regulation requires that
18 each and every one of these criteria must be met in order for
19 the affirmative defense to apply?

03:07:48 20 THE COURT: Each of them or all of them, you mean?

21 THE WITNESS: Simultaneously, at the time the event
22 happened, they have to all be positive. Yes. Yes. Yes. Yes.
23 Yes. Yes.

24 **Q** And do you have -- do you consider yourself to have the
03:08:03 25 expertise to assess any of these affirmative defense criteria?

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1 **A** Yes.

2 **Q** So, for example, the second criteria is whether the
3 emission event was -- whether "the unauthorized emissions were
4 caused by sudden, unavoidable breakdown of equipment or process,
03:08:25 5 beyond the control of the owner or operator?"

6 Is that something you feel you have the expertise
7 to assess?

8 **A** Yes, sir.

9 **Q** And Number 3 is "the unauthorized emission did not stem
03:08:35 10 from any activity or event that could have been foreseen and
11 avoided or planned for and could not have been avoided by better
12 operation and maintenance practices or technically feasible
13 design consistent with good engineering practice."

14 **A** Yes, sir.

03:08:50 15 **Q** And you're capable of assessing that?

16 **A** Yes, sir.

17 **Q** And there are several other criteria in this list that
18 you've reviewed as -- in your -- and applied your professional
19 judgment as an engineer?

03:09:01 20 **A** I have.

21 **Q** Now, are you aware that Exxon is asserting that
22 approximately 100 of the emission events at issue in this case
23 should qualify for the affirmative defense?

24 **A** I haven't counted them, but that's a -- sounds about right.

03:09:18 25 They checked the "yes" box on every one, if I remember right.

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1 Q And you reviewed the reports of Exxon's expert, Christopher
2 Buehler, relating to the affirmative defense of these events?

3 A Yes.

4 Q And you've actually issued a rebuttal report to Mr. Buehler
5 and that's Plaintiffs' Exhibit --

03:09:33

6 THE COURT: It's in the file also?

7 MR. KRATKA: Yes.

8 THE WITNESS: Yes, sir.

9 BY MR. KRATKA:

03:09:41

10 Q -- 428?

11 Now, there's a lot of events during the --

12 MR. KRATKA: Well, strike that.

13 BY MR. KRATKA:

14 Q Now, did you attempt to determine for yourself whether --

03:09:47

15 for the affirmative defense criteria that you do have the
16 expertise to analyze, did you attempt to determine whether each
17 of those criteria for each event was met?

18 A Yes.

19 Q And in addition to the rebuttal report that you provided,

03:10:06

20 did you also create a summary table of your determined -- of
21 your determinations with respect to each of these events?

22 A I believe I did.

23 MR. KRATKA: And again, your Honor, rather than go
24 through every event, I'm going to show him the summary table

03:10:24

25 that was created.

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1 BY MR. KRATKA:

2 Q And ask you a few questions about it to establish what it
3 is and how it was created. So if you turn to Plaintiffs'
4 Exhibit 446.

03:10:53

5 A Yes.

6 Q And this report is entitled "Summary of Conclusions
7 Regarding Affirmative Defense Criteria and Baytown STEERS
8 Events."

03:11:22

9 THE COURT: I'm looking across the top. There's just
10 six -- six entries there. Is it multiple -- you going for the
11 other --

12 BY MR. KRATKA:

13 Q Mr. Bowers, could you just -- were those the six -- you'd
14 just analyzed six of those eleven criteria?

03:11:35

15 A Yes.

16 Q And those are the six across the top?

17 A Yes.

18 Q And is this summary based on voluminous documents
19 produced -- your analysis of voluminous documents produced by
20 Exxon in this case?

03:11:47

21 A Yes, sir.

22 Q And you're familiar -- obviously, you're familiar with the
23 underlying documents on which this chart is based?

24 A Yes.

03:11:52

25 Q And does this chart contain the conclusions you've drawn

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1 from those documents?

2 **A** Yes.

3 **Q** And did you create this chart yourself or did you supervise
4 its creation?

03:12:03 5 **A** I supervised its creation.

6 **Q** And that was Plaintiffs' legal staff?

7 **A** That was Plaintiffs' legal staff. We discussed at length
8 how to do this.

9 **Q** And did you check its accuracy --

03:12:14 10 **A** I did.

11 **Q** -- during the process?

12 **A** Yes.

13 **Q** And does this chart accurately summarize your conclusions
14 regarding the application of those six criteria that you looked
03:12:26 15 at to the Exxon emission events?

16 **A** Yes.

17 **Q** So just -- again, rather than go exhaustively through it,
18 we can look at a couple of examples. The very first entry here,
19 STEERS Number 66872.

03:12:49 20 THE COURT: Again, where is it?

21 MR. KRATKA: Very top left.

22 THE COURT: The first one?

23 MR. KRATKA: Yes.

24 THE COURT: 72.

03:12:58 25 MR. KRATKA: Yeah.

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1 THE COURT: Go right ahead.

2 BY MR. KRATKA:

3 Q And what was your conclusion as to whether

4 Section 101.222(b)(2) was complied with? In other words,

03:13:08 5 whether a sudden, unavoids -- whether the event arose from a

6 sudden, unavoidable breakdown beyond the control of the

7 operator?

8 A Exxon documentation showed that it was a leak caused by

9 corrosion --

03:13:22 10 Q And that --

11 A -- which is not sudden.

12 Q And the information on corrosion you obtained from

13 documents provided to Christopher Buehler?

14 A That is correct.

03:13:32 15 Q And did you also determine that this event didn't meet

16 the --

17 A It was a -- it was a pattern of frequent problems over

18 there at infamous Booster Station 4.

19 Q Right. So you found that the event, in fact, was part of a

03:13:56 20 frequent or recurring pattern?

21 A Yes.

22 Q In support of that, you referred to the table in your

23 supplemental report dealing with --

24 THE COURT: Now, let me ask you this: Going across

03:14:04 25 the top, is this the defense that they had or this is the one

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1 that he's paraphrasing to get over what the defense is?

2 MR. KRATKA: They claim that they complied with each
3 of the 11 criteria. It's --

03:14:20

4 THE COURT: Okay. For instance, what's the first
5 criteria as a defense, that the event was not a sudden
6 unavoidable breakdown?

7 MR. KRATKA: Well, that --

8 THE COURT: Or is that his paraphrasing of it?

9 BY MR. KRATKA:

03:14:31

10 Q No. That -- that is the -- in quotation marks -- sorry,
11 yeah, the part that's in quotation marks a "sudden, unavoidable
12 breakdown beyond the control of the operator," that is the
13 condition that someone --

14 THE COURT: Okay.

03:14:48

15 MR. KRATKA: -- must prove --

16 THE COURT: So the capital letter is his position.

17 MR. KRATKA: Correct.

18 THE COURT: Got it.

19 MR. KRATKA: So whenever --

03:14:52

20 THE COURT: But the -- but the regulation is in
21 quotes.

22 MR. KRATKA: Correct.

23 THE COURT: That would be a defense, a sudden
24 unavoidable breakdown.

03:14:59

25 MR. KRATKA: Correct. So if you go down the table --

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1 THE COURT: Yeah.

2 MR. KRATKA: -- whenever he found for a particular
3 event that that particular criteria was not met, you'll see a
4 notation to a column.

03:15:07 5 BY MR. KRATKA:

6 Q And that's the same for each of the criteria you evaluated?

7 A Yes, sir.

8 Q And overall, so there's about 100 events on that list.

9 Have you reached a conclusion as to whether Exxon
03:15:27 10 actually qualified for the affirmative defense for all 101 of
11 those events?

12 A Yes. Shown in this -- in this table, there are specific
13 instances where they failed to qualify for a consideration for
14 an affirmative defense.

03:15:47 15 THE COURT: Now, remind me, wasn't there some
16 testimony in the case saying that most people just put that
17 affirmative defense "yes" in that box?

18 MR. KRATKA: Correct.

19 THE COURT: As just a matter -- I'm not -- I don't
03:15:57 20 want to put words in anybody's -- as a matter of course,
21 whenever you see these, from many companies, they always will
22 list -- they list it, they confess to it, so to speak; but they
23 say affirmative defense to this yes. If not, remind me, there's
24 just --

03:16:15 25 MR. KRATKA: There was testimony that Exxon may have

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1 done that.

2 MR. NICHOLS: And to put this in context, Judge, these
3 are the events for which TCEQ determined that the affirmative
4 defense applied. That's what he's -- I think that's what he's
03:16:26 5 addressing.

6 THE COURT: These are the ones where they -- where the
7 agency said it applies but your expert is saying really they
8 shouldn't have done that. There wasn't enough in the records to
9 show that it was, in fact, a violation.

03:16:39 10 MR. NICHOLS: Correct.

11 THE COURT: Okay.

12 MR. KRATKA: Each area of his disagreement with the
13 agency, your Honor.

14 THE COURT: Okay. Thank you. That helps.

03:16:49 15 MR. KRATKA: And again, the Plaintiffs' position,
16 without the jury here, is that even when the affirmative defense
17 to a penalty does apply, it's only a defense to penalties. It
18 is not a defense to liability.

19 THE COURT: Okay. I see.

03:16:59 20 BY MR. KRATKA:

21 **Q** Now, Mr. Bowers, the Bay -- as we saw yesterday the Baytown
22 complex is very large, correct?

23 **A** Yes.

24 **Q** Do you know how the size of the Baytown refinery compares
03:17:19 25 to other refineries?

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1 **A** It is perhaps larger than all but a couple.

2 THE COURT: In the United States?

3 THE WITNESS: In the United States, yes.

4 BY MR. KRATKA:

03:17:26 5 **Q** And is that true of the entire complex?

6 **A** Yes, includes the entire complex.

7 **Q** Now, this is an important question: Does the sheer size of
8 the Baytown complex, the number of valves, the miles of piping,
9 the number of different units, does simply the sheer size of the
03:17:47 10 Baytown Complex, prevent Exxon from performing preventive
11 maintenance or system upgrades that would be sufficient to avoid
12 emission events?

13 MR. NICHOLS: Your Honor, I'll object to the question.
14 No one has claimed that the size of the plant eliminates
03:18:06 15 preventive maintenance for --

16 THE COURT: I understand it. I understand your
17 position. Overrule the objection. I understand your position.
18 I'll allow him to answer. Relative to size.

19 THE WITNESS: The size and pieces of equipment, the
03:18:16 20 number of equipment does not, inherently, preclude the facility
21 from being maintained in an appropriate fashion.

22 The size is -- you just -- it needs more people.
23 You add people according to the number of pieces of equipment to
24 have it maintained.

03:18:37 25 **Q** So whether a plant has ten valves or ten thousand valves or

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1 a million valves, they can be maintained properly?

2 **A** A valve is a valve is a valve.

3 **Q** And do you know how the complexity of the Baytown refinery
4 and the two chemical plants compared to other facilities?

03:18:59 5 **A** It's probably the top one or two in terms of complexity.
6 The products go from one unit to another to be made into a
7 different product.

8 **Q** Is there anything about the complexity of the Baytown
9 Complex that would prevent Exxon from performing the types of
03:19:15 10 preventive maintenance or other system upgrades that would be
11 sufficient to avoid emission events?

12 MR. NICHOLS: Same objection, your Honor; but you
13 understand our position.

14 THE COURT: Okay. Thank you.

03:19:16 15 MR. KRATKA: I'll just repeat the question for the --

16 THE COURT: Overruled, for the record.

17 MR. KRATKA: I'm repeating the question for the court
18 reporter.

19 BY MR. KRATKA:

03:19:28 20 **Q** Does the complexity of the Baytown Complex prevent Exxon --
21 I'm sorry.

22 Is there anything about the complexity of the
23 Baytown Complex that would prevent Exxon from performing
24 preventive maintenance or system upgrades that would be
03:19:43 25 sufficient to avoid emission events?

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1 **A** There is nothing inherent in the plant interconnection or
2 complexity, the number of processes that connect -- there's
3 nothing in that that would preclude proper maintenance reducing
4 the number of events. There's nothing there that says that
5 we're going to have emissions. Nothing there.

03:20:00

6 **Q** And again, you talked about the age of the refinery. Can
7 the age of the refinery -- is the age of the refinery an
8 impediment to performing the types of preventive maintenance and
9 other upgrades and operation needed to prevent -- that would be
10 sufficient to prevent emission events?

03:20:19

11 **A** Age is not an excuse. It can be maintained, should be
12 maintained, and must be maintained in a leak-tight condition.

13 **Q** Now, Mr. Bowers, doesn't every refinery sometimes have
14 emission events?

03:20:39

15 **A** Unfortunately, yes.

16 **Q** And have the facilities you yourself worked at experienced
17 emission events?

18 **A** Yes.

19 **Q** Even while you worked there?

03:20:48

20 **A** Yes.

21 **Q** So then let me ask you the bottom line question: From an
22 engineering standpoint, have there been too many emission events
23 at the Baytown Complex?

24 **A** In my opinion, yes.

03:21:00

25 **Q** In your opinion, could Exxon have done more to prevent or

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1 cut down on the large number of emission events at the complex?

2 **A** The description of events itself says yes. Leaks can be
3 prevented.

03:21:18

4 **Q** So even going forward, is it your opinion that Exxon can
5 still do more than it's doing now to prevent or cut down on
6 emission events?

7 **A** Yes.

8 **Q** Now, are you saying that absolutely every single one of the
9 4,000 emission events in this case could have been prevented?

03:21:36

10 **A** Yes.

11 **Q** From an engineering standpoint, can the Baytown Complex get
12 closer than it is now to a no emissions event status?

13 **A** Yes.

03:21:54

14 **Q** Now, are you aware of any refineries or chemical plants
15 that have, in fact, achieved a better record regarding emission
16 events than Baytown, taking into account the size of this
17 facility?

03:22:08

18 MR. NICHOLS: I'll object, your Honor. I'm not sure
19 of anything that was in any expert disclosure that relates to
20 any of this, any opinion like that, unless we want to talk about
21 Shell Deer Park or Chevron Phillips.

22 MR. KRATKA: I'll withdraw that question, your Honor.

23 BY MR. KRATKA:

03:22:30

24 **Q** Now, you talked a little bit about Exxon's preventive
25 maintenance program, correct?

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1 **A** Yes.

2 **Q** Are you familiar with every single aspect of Exxon's
3 maintenance program?

4 **A** No.

03:22:37 5 **Q** And have you read all of Exxon's work practice guidelines
6 and design standards?

7 **A** No.

8 **Q** So if you're not familiar with all of the internal details
9 of Exxon's maintenance and operations, how can you give an
03:22:47 10 opinion regarding deficiencies and preventive maintenance at the
11 Baytown Complex?

12 **A** I only look at the results that they obtained. If you have
13 a leak due to corrosion or fatigue, you didn't inspect it often
14 enough. You didn't inspect it properly. It's not something
03:23:08 15 that happened instantly.

16 **Q** Now, let's get to the Court's question about how much it
17 would take to improve things to a degree that you considered to
18 be sufficient. And you already talked about additional labor
19 costs that would be required?

03:23:26 20 **A** Yes.

21 **Q** Would the \$90 million a year figure that you came up with,
22 would that also include additional equipment or material costs?

23 **A** Yes.

24 **Q** And these types of costs are typically described as
03:23:41 25 operation and maintenance costs?

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1 **A** Yes.

2 **Q** Now, did you attempt to determine -- in coming up with that
3 \$90 million figure, did you go emission event by emission event
4 for every 4,000 events to determine the specific way in which
5 each individual event could have been prevented?

03:24:01

6 **A** No.

7 **Q** Why not?

8 **A** It's just too voluminous and misleading results can be
9 found that way.

03:24:11

10 **Q** Did you take a global approach, instead, to estimating what
11 it would have cost to significantly reduce the occurrence of
12 emission events?

13 **A** I did.

03:24:21

14 **Q** And is a global-type approach to estimating operating and
15 maintenance costs something that you've done in your
16 professional work?

17 **A** Yes, numerous times.

18 **Q** And those are projects that you described earlier in your
19 testimony?

03:24:28

20 **A** Yes, some of those were described.

21 **Q** At the time you wrote your initial report, did you know how
22 much Exxon was actually spending on maintenance-related budget
23 items?

24 **A** No, I did not.

03:24:40

25 **Q** Did you attempt to determine what Exxon was spending on

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1 maintenance on your own?

2 **A** I did not ask anyone how much Exxon was spending. I
3 calculated what I believe would be an appropriate amount.

4 **Q** And how did you calculate that?

03:24:54 5 **A** I estimated the replacement cost of the facility in a
6 depreciated status.

7 **Q** And you said you've already given expert testimony -- you
8 previously testified as an expert on replacement cost of
9 facilities?

03:25:06 10 **A** Yes. And I used an industry standard, two and half to
11 three percent of replacement cost for a Gulf Coast plant
12 refinery as an appropriate level of maintenance expenditures.

13 **Q** So is that an industry standard for this area of the
14 country?

03:25:21 15 **A** Acceptable to the financial institutions that finance these
16 projects.

17 **Q** And how much did you estimate the replacement cost of the
18 facility to be?

19 **A** I -- I estimated it at \$18 billion. And that's -- it's on
03:25:33 20 the very low side of today's costs.

21 THE COURT: What was that for.

22 THE WITNESS: That's replacing the complex in total.

23 THE COURT: In total. You also stated in one of the
24 questions I had about \$1 billion to bring it up to par, so to
03:25:49 25 speak?

Bowers - Direct/Kratka

1 THE WITNESS: Yes, sir.

2 THE COURT: But it's -- how many billions were it to
3 take for a new --

4 THE WITNESS: 30.

03:25:55 5 THE COURT: Okay. 30 billion for a whole new
6 operation?

7 THE WITNESS: Yes.

8 BY MR. KRATKA:

9 Q But in terms of calculating the replacement cost, you
03:26:02 10 estimated that at \$18 billion?

11 A 18 billion.

12 Q And then you took a percentage of that as --

13 THE COURT: 18 billion for -- again, remind me of the
14 exact wording.

03:26:11 15 THE WITNESS: That's depreciated, as-it-sits value.

16 THE COURT: Now?

17 THE WITNESS: Yes.

18 THE COURT: But it would take 30 billion to replace it
19 all?

03:26:19 20 THE WITNESS: Yes.

21 THE COURT: But 18 billion as valued now with the
22 depreciation scale?

23 THE WITNESS: Yeah.

24 THE COURT: Thank you.

03:26:25 25 //

Bowers - Direct/Kratka

1 BY MR. KRATKA:

2 Q And then you used that \$18 billion to come up with your own
3 ballpark estimate of what the complex was spending on its
4 maintenance budget?

03:26:36 5 A I did.

6 Q And what percentage did you end up using?

7 A I believe it was two percent.

8 Q Three percent?

9 A Two percent or three percent. I'd have to go back and
03:26:44 10 look. Probably three percent because it's old and it's in a
11 hostile climate.

12 Q So you took into account the age and the location and used
13 three percent as --

14 A Yes.

03:26:54 15 Q All right. And that three percent of 18 billion dollars is
16 540 --

17 A 540 million.

18 Q And then, after you wrote your initial report which
19 contained this \$540 million estimate of what Exxon was probably
03:27:09 20 spending on maintenance, did Exxon eventually produce its actual
21 maintenance budgets for the three plants?

22 A It did.

23 Q And did you have a chance to review that budget
24 information?

03:27:18 25 A I did.

Bowers - Direct/Kratka

1 Q And if you turn to Plaintiffs' Exhibit 451.

2 THE COURT: That 540 million, that's per year; is that
3 correct, sir?

4 THE WITNESS: Yes, sir.

03:27:33 5 THE COURT: Okay.

6 (Discussion off the record.)

7 BY MR. KRATKA:

8 Q And so looking at Exxon's actual maintenance budgets which
9 are in Plaintiffs' Exhibit 451 for the years 2005 through
03:28:37 10 2013 -- well, let's look at 2005 through 2012.

11 Does the actual spending on maintenance roughly
12 approximate the amount you calculated on your own?

13 A Yes, sir. It's within ten percent. It's an extremely good
14 fit.

03:28:55 15 Q Now, how did you go about estimating how much additional
16 spending beyond the 540 million -- roughly 540, 570 million a
17 year that Exxon had been spending on maintenance, how did you go
18 about estimating how much additional spending on preventive
19 maintenance was required?

03:29:24 20 A That's -- that's where judgment comes into it. And I said,
21 well, how many more people running around inspecting things will
22 it take to find all of these leaks. And working from what are
23 they spending, how many more. And I figured it would be -- at
24 least half of that expense would be for material and half of it
03:29:49 25 for labor. And I used an oil and labor rate, about, I think, it

Bowers - Direct/Kratka

1 was \$85 an hour which is probably high because they had most of
2 their work done contract but I don't know how much an hour they
3 spend for their contract labor.

03:30:14 4 And so I said 900 people at that average rate is
5 somewhere around 50 percent of the total amount. The rest of it
6 is going to be material. And added them together came up to \$90
7 million. And it's a crude estimate I admit. You can't go, you
8 know, line item by line item and get there.

9 Q And did this maintenance budget, the additional maintenance
03:30:31 10 budget that you came up with, include more than leak detection?

11 A Yes. It includes all kinds of general maintenance. Just
12 do more of it. Inspect and, you know, grease the valves, do --
13 do stuff that needs to be done.

14 Q And have you done this type of calculation before?

03:30:48 15 A I have.

16 Q For what facilities have you done this?

17 A I did it for Shell Deer Park. I've done it for Texaco. I
18 did it for Shell on the West Coast.

19 Q And those were in your professional --

03:31:00 20 A Yes.

21 Q -- consulting work?

22 A Professional consulting work, yes, sir.

23 Q And were those estimates relied upon and used by the --
24 your clients?

03:31:09 25 A Yes.

Bowers - Direct/Kratka

1 Q Now let's look at Exxon's maintenance budget, again,
2 Exhibit 451. And look at the year 2013.

3 What was Exxon's total maintenance spending in
4 that year?

03:31:40 5 A \$706 million.

6 Q And that's -- is that significantly higher than the six,
7 seven preceding years?

8 A Yes, sir.

9 Q Do you know why the maintenance budget was higher in 2013?

03:31:52 10 A I have no idea. I really don't.

11 Q Okay. Now, did you also review budgetary information from
12 Exxon that provided more detailed breakdowns of spending on
13 maintenance-related capital projects?

14 A I did, yes.

03:32:06 15 Q And then, this --

16 MR. KRATKA: Your Honor, this is the document that we
17 received much more recently. So I'm going to mark it as an
18 exhibit, provide it to counsel.

19 THE COURT: Give it a number, please.

03:32:20 20 MR. KRATKA: It'll be Plaintiffs' Exhibit 614.

21 THE COURT: Any objection?

22 MR. NICHOLS: Not if it's something we provided,
23 Judge. I'll just take a look at it.

24 We produced this, Judge, that's fine.

03:32:34 25 THE COURT: Okay. 614's admitted.

Bowers - Direct/Kratka

1 Yeah, why don't you hand it to one of my
2 clerks.

3 Don't forget, I keep saying keep track of these
4 exhibits. I mean, one person on each side needs to keep track
03:32:51 5 of the exhibits.

6 MR. KRATKA: Someone more organized than myself.

7 THE COURT: Well, me, too.

8 BY MR. KRATKA:

9 Q Mr. Bowers, is this the budgetary information that you had
03:33:08 10 reviewed?

11 A Yes, this is the recent stuff.

12 Q And did you draw any conclusions from reviewing this data?

13 A Unfortunately, I did.

14 Q What conclusion did you draw?

03:33:20 15 A Very small amount of capital investment. Very, very small,
16 in peyok (phonetic spelling.)

17 THE REPORTER: I'm sorry?

18 MR. NICHOLS: Do what?

19 THE COURT: What was that?

20 BY MR. KRATKA:

21 Q What was that?

22 A It's de minimis.

23 THE COURT: De minimis?

24 THE WITNESS: Yes. It's so small -- that the amount
03:33:32 25 of capital expenditures is astonishingly small for a facility of

Bowers - Direct/Kratka

1 that size.

2 THE COURT: So in other words, the new equipment.

3 THE WITNESS: Yes, sir. This is something that IRS
4 says it extends or improves the value of the product -- of a
5 plant. It's just trivial. Trivial.

03:33:46

6 BY MR. KRATKA:

7 Q Is it your estimation that the amount that Exxon is
8 spending on capital upgrades at the facility is sufficient to
9 keep it in good working order?

03:34:04

10 A No, sir.

11 Q Now, you already talked about the one particular capital
12 project regarding two additional flare gas recovery compressors
13 at a cost of -- your estimated cost of \$50 million.

14 Can you describe your other recommendation for a
15 capital project.

03:34:24

16 MR. KRATKA: And your Honor, in terms of what
17 Plaintiffs will be relying on in terms of the amount of money
18 that should have spent to achieve compliance with the -- our
19 economist will be relying on the \$90 million figure, operation
20 and maintenance under-spending, the \$50 million compressor
21 upgrade, and this next capital project.

03:34:44

22 BY MR. KRATKA:

23 Q Go ahead.

24 A The main expenditure was for an additional sulfur recovery
25 unit and tail gas treating unit.

03:34:57

Bowers - Direct/Kratka

1 THE COURT: Where is that in this?

2 MR. KRATKA: That would be in Mr. Bowers' initial
3 report.

4 THE COURT: Oh, his initial report.

03:35:07 5 MR. KRATKA: Yes. Which is Page 19 of Plaintiffs'
6 Exhibit 427.

7 THE COURT: Is it listed on here as far as capital
8 improvements?

9 MR. KRATKA: This is something that Mr. Bowers is
03:35:17 10 suggesting. It's not something that Exxon has done.

11 THE COURT: Okay. This is what he suggests?

12 MR. KRATKA: That -- no, I'm sorry. No, that --
13 that's --

14 THE COURT: I'm looking at 614.

03:35:24 15 MR. KRATKA: 614 are the various capital projects that
16 Exxon has actually done for the last eight years or so.

17 And now Mr. Bowers is suggesting that there is an
18 additional upgrade that should be made that is not on there and
19 he's saying had -- we'll get him to say -- the testimony we'll
03:35:44 20 go into is had they done it --

21 THE COURT: How much money they saved.

22 MR. KRATKA: How much money they saved and, in his
23 opinion, it would be a project that could have avoided some of
24 these past emissions, could have been in compliance.

03:35:52 25 //

Bowers - Direct/Kratka

1 BY MR. KRATKA:

2 **Q** Mr. Bowers, could you describe what the project is that
3 you're suggesting regarding sulfur recovery units.

03:36:13

4 **A** Yes. I would suggest they install an addition line or
5 train, if you want to call it that, a full-capacity sulfur
6 recovery unit of 400 tons per day and an appropriately-size tail
7 gas treating unit to handle the emissions from that sulfur
8 plant. This would give them the ability to maintain operations
9 without affecting anything in the event one sulfur plant was
10 down for heavy maintenance and another tripped for some -- some
11 reason.

03:36:33

12 **Q** And is it your opinion that that project could have
13 resulted in avoiding emission events that occurred?

14 **A** Yes.

03:36:47

15 **Q** And do you have an -- can you estimate or do you know how
16 many emission events could have been avoided?

17 **A** I don't recall the number, no, I don't. But there were
18 several large -- the problem is it's a very large emission of
19 very hazardous material and it stinks up the air pretty bad.

03:37:11

20 And the changes in operations to reduce their production of
21 hydrogen sulfide take quite a bit of time to work.

22 **Q** Let me show you Plaintiffs' Exhibit 607. This is a
23 document that was produced in discovery by Exxon and it's Bate's
24 Number 166167. Can you read the title of this chart?

03:37:45

25 **A** Yes. It's total emissions of all types of pollutants from

Bowers - Direct/Kratka

1 sour gas flaring emission events and scheduled maintenance
2 shutdown and startup events that possible -- in this suit that
3 possibly could have been prevented if an additional spare sulfur
4 unit had been installed and operational at the time of the
5 event.

03:38:12

6 **Q** So an additional spare sulfur unit, that's what you're
7 recommending?

8 **A** Yes, sir.

9 **Q** And this chart goes through emission events that were

03:38:21

10 listed in the Plaintiffs' complaint?

11 **A** Yes.

12 **Q** And for each event, does it provide a start date?

13 **A** Yes, it does.

14 **Q** And the STEERS number of the event?

03:38:33

15 **A** Yes, it does.

16 **Q** And the total emissions that possibly would have been
17 prevented as that -- your recover -- had your sulfur recovery
18 unit been in place?

19 **A** Yes.

03:38:41

20 **Q** And what is the total amount of emissions that would have
21 been prevented?

22 **A** 86,700 pounds of emissions.

23 **Q** And they also convert that into tons?

24 **A** Yes.

03:38:54

25 **Q** And this is an exhibit prepared -- or this is a chart

Bowers - Direct/Kratka

1 prepared by Exxon, correct?

2 **A** Yes. It's 44 tons of primarily hydrogen sulfide.

3 **Q** And that's just from events that occurred from 2005 to
4 2010, correct?

03:39:09 5 **A** Yes.

6 **Q** What was -- what would be the useful life of a sulfur
7 recovery unit?

8 **A** It's greater than 25 years.

9 **Q** So, going forward, such a unit could prevent emissions from
03:39:28 10 numerous additional emission events, correct, if they occurred?

11 **A** It's a double suspender situation and appropriate.

12 **Q** What do you mean by "a double suspender"?

13 **A** By law they have to have a full capacity sulfur unit hot
14 and ready to go. If they have two sulfur units, they have to
03:39:51 15 have a third. So if one of them drops offline, drops dead, they
16 can switch the valve and put it in operation.

17 **Q** So this is redundant capacity?

18 **A** This is redundant capacity.

19 **Q** And does this address the idea that even if breakdowns and
03:40:06 20 accidents are unavoidable, are you saying that emissions from
21 those accidents could, nonetheless, be prevented?

22 **A** Yes.

23 **Q** So as you said very earlier in your definition of an
24 emissions event, a breakdown doesn't have to -- a breakdown may
03:40:18 25 occur --

Bowers - Direct/Kratka

1 **A** Yes.

2 **Q** -- but a breakdown, an upset, doesn't always have to result
3 in air emissions?

4 **A** Correct.

03:40:25 5 **Q** And so this type of capital project is designed -- even if
6 all events are not avoidable, this the project you're proposing
7 would avoid emissions in the event of an unavoidable event?

8 THE COURT: Hold on second.

9 MR. NICHOLS: Pure leading, your Honor.

03:40:40 10 THE COURT: Sustained.

11 THE WITNESS: It was my intent to --

12 BY MR. KRATKA:

13 **Q** My questions were overruled.

14 What was the cost of this -- what would be the
03:40:50 15 cost of this sulfur recovery unit?

16 **A** My estimate, it would be in excess of a hundred million
17 dollars, probably 150, maybe, on the max side, depending on how
18 much urban renewal was included.

19 **Q** But in your report, you estimated on the low end a hundred
03:41:13 20 million dollars?

21 **A** Hundred million dollars.

22 **Q** And that's capital costs?

23 **A** That's capital.

24 **Q** Okay.

03:41:18 25 MR. KRATKA: That's all I have, your Honor.

Bowers - Cross/Nichols

1 THE COURT: Okay. Let's take a break at this time.
2 We'll get back in at five minutes to 4:00. Five to 4:00.

3 (Court recessed at 3:41 p.m.)

4 (Court resumed at 4:00 o'clock p.m.)

04:00:33 5 THE COURT: Go right ahead.

6 CROSS EXAMINATION

7 BY MR. NICHOLS:

8 Q Good afternoon, Mr. Bowers.

9 A Yes.

04:00:37 10 Q Good afternoon.

11 A Good afternoon.

12 THE COURT: Pull that mike in, sir.

13 BY MR. NICHOLS:

14 Q Mr. Bowers, during the course of this trial, we've been
04:00:46 15 pretty good about trying to educate the Court about how everyone
16 who is involved in testifying in the case got involved in the
17 lawsuit. So I want to kind of put a little more flesh on the
18 bones with you, if I might.

19 Is that all right?

04:01:00 20 A It's your time, Counsel.

21 Q So the Court knows, you were hired by the National
22 Environmental Law Center, correct?

23 A Yes.

24 Q You were hired by the National Environmental Law Center
04:01:19 25 pursuant to a retention agreement that you signed in

Bowers - Cross/Nichols

1 mid-November of 2009, correct?

2 **A** I don't recall that exact date but that seems about right.
3 If you show it to me, I'll let you know if it's the right one.

04:01:38

4 **Q** Yes, sir. Do you recall, generally, that your work in the
5 case -- your substantive work, the work for which you billed in
6 the case, began in February of 2012?

7 **A** Is that a question?

8 **Q** I thought it was. I can ask the question again.

04:02:00

9 Do you recall that your substantive work in the
10 case, the work for which you billed, pursuant to what Mr. Kratka
11 told you was or talked about was the billing arrangement, that
12 your substantive work in the case began in February of 2012?

13 **A** I don't recall, sir. If you show me my invoice, I could
14 say.

04:02:16

15 **Q** So your invoice would reflect the first time that you did
16 work in the case for which you billed, correct?

17 **A** Correct.

18 **Q** Okay.

19 **A** That's a long time ago for an old man.

04:02:28

20 **Q** And Mr. Bowers, as the Court said, if any time today you
21 need to take a break, you know, you just let the Court know and
22 I'm sure he'll accommodate you.

23 MR. NICHOLS: Could I have the extra copies of the
24 retention letter, please.

04:02:57

25 //

Bowers - Cross/Nichols

1 BY MR. NICHOLS:

2 **Q** Mr. Bowers, I'm going to hand you what we've marked as
3 Defendant's Exhibit 523 and ask if you can recognize that as
4 being the retention letter by which you were retained for this
5 case.

04:03:14

6 **A** It appears to be that.

7 **Q** And just to give the Court a frame of reference, you had
8 been retained by the National Environmental Law Center on two
9 prior cases, correct?

04:03:28

10 **A** Yes.

11 **Q** A case involving the Shell Deer Park refinery, correct?

12 **A** Correct.

13 **Q** And a case involving the Chevron Phillips or C. P. Chem
14 facility out on I-10 near Mont Belvieu, correct?

04:03:44

15 **A** Yes.

16 **Q** Okay. And so -- and just to give the Court a little more
17 reference, the way that you got hooked up with the National
18 Environmental Law Center was through your association with a
19 group called GHASP, later Air Alliance, correct?

04:04:00

20 THE COURT: What?

21 MR. NICHOLS: GHASP, G-A -- G-H-A-S-P, or Air
22 Alliance, correct?

23 THE WITNESS: No.

24 BY MR. NICHOLS:

04:04:14

25 **Q** Mr. Bowers, you worked with a group called GHASP,

Bowers - Cross/Nichols

1 G-H-A-S-P, before you were retained by the National
2 Environmental Law Center, correct?

3 **A** I did volunteer work with that group.

4 **Q** Yes, sir. As a technical advisor?

04:04:32 5 THE COURT: What does that mean? What group? What's
6 the letters?

7 BY MR. NICHOLS:

8 **Q** What does it stand for? You tell the Court.

9 **A** I don't recall. It's greater Houston area.

04:04:41 10 **Q** Galveston Houston Alliance for Smog Prevention.

11 Does that ring any bells?

12 **A** That sounds right.

13 **Q** Okay. So, you worked with this group. It is an
14 environmental advocacy group, correct?

04:04:55 15 **A** That's your words, sir, not mine.

16 **Q** As a matter of fact, I asked you about that and you agreed
17 that it's an environmental advocacy group, correct?

18 **A** I don't recall that answer.

19 THE COURT: All right. Show him.

04:05:02 20 MR. NICHOLS: Okay.

21 BY MR. NICHOLS:

22 **Q** So, with respect to this GHASP group, later became Air
23 Alliance, correct?

24 **A** I'm not familiar with the Air Alliance transition.

04:05:14 25 **Q** Okay. You worked with this group called GHASP and you

Bowers - Cross/Nichols

1 understand -- what were you doing from a technical advisor
2 standpoint?

3 **A** I was consulting with a former associate, Bob Levy, who is
4 active there, in flares.

04:05:25 5 **Q** Okay. And what was Mr. Levy working on with respect to
6 flares through the GHASP group?

7 **A** They were undertaking a study to evaluate flare destruction
8 efficiency.

9 **Q** Sure. And the group was advocating for a change in the way
04:05:54 10 that flare efficiency would be calculated, correct?

11 **A** I know not of that.

12 **Q** With respect to your work for GHASP, you then came to be
13 retained by the National Environmental Law Center, correct?

14 **A** The two have nothing to do with each other.

04:06:13 15 **Q** Okay. Let me show you what we've marked as Exhibit 523.
16 Let me put it up on the screen so the Court can see.

17 This is a letter dated November 12, 2009,
18 correct?

19 **A** Yes.

04:06:42 20 **Q** And the letter says that "The National Environmental Law
21 Center would like to retain you to assist in a Clean Air Act
22 enforcement case brought by Environment Texas and Sierra Club
23 against ExxonMobil Corporation and ExxonMobil Chemical Company
24 regarding violations at the Baytown refinery and chemical plant
04:07:04 25 complex," correct?

Bowers - Cross/Nichols

1 **A** That's what it says.

2 **Q** "The initial work will be for case evaluation and
3 settlement support with expert report preparation and expert
4 witness testimony possible should the litigation proceed."

04:07:18

5 Did I read that correctly?

6 **A** You read well.

7 **Q** And so you were -- and you agreed to this, correct?

8 **A** I signed the agreement, yes.

04:07:31

9 **Q** So you agreed to be retained to assist the National
10 Environmental Law Center in this lawsuit and, should the
11 litigation proceed past any possible settlement, you would write
12 a report and provide expert witness testimony, correct?

13 **A** I can agree to that.

04:07:52

14 **Q** And this sets out the hourly rate that you talked about as
15 being \$100 an hour, correct?

16 **A** Yes.

17 **Q** And specifically, you agreed to keep contemporaneous
18 records describing the nature of the work you perform on the
19 case and the amount of time spent on each task, correct?

04:08:06

20 **A** Yes.

21 **Q** And so if we were to go to your actual time records, we
22 would see when it was that you began substantive work on the
23 case, correct?

24 **A** Yes.

04:08:18

25 **Q** Okay. Mr. Bowers, I'm going to hand you now what we marked

Bowers - Cross/Nichols

1 as Defendants' Exhibit 524.

2 Do you recognize Exhibit 524 as being the time
3 records that you produced in conjunction with your deposition
4 given in this case?

04:09:02 5 **A** Yes.

6 **Q** And you would -- would you agree with me that these
7 records, Exhibit 524, reflect what I said earlier: that your
8 work in the case, your substantive work began in February of
9 2012?

04:09:20 10 **A** So indicated here.

11 **Q** So in other words, you were retained in November of 2009
12 but you did not initiate your substantive work in the case until
13 February of 2012, correct?

14 **A** That -- that appears to be what happened.

04:09:34 15 **Q** And as you went through with Mr. Kratka at great detail
16 earlier, could you please tell the Court how soon it was after
17 you started your substantive work in February of 2012 that you
18 produced your initial report in this case.

19 **A** Would you show me the date of that initial report, please.

04:10:11 20 **Q** Sure.

21 You don't still have it? I thought you had all
22 your binders up there with all your reports.

23 **A** I had the stuff produced --

24 **Q** Okay.

04:10:17 25 **A** -- by Plaintiffs.

Bowers - Cross/Nichols

1 Q So you don't have the binders before you that you were
2 using in your testimony earlier?

3 A That's what I said.

4 Q Okay. Let me show you, then, what's been marked previously
04:10:41 5 as Plaintiffs' Exhibit 427 and ask if this is a copy -- another
6 copy besides the one you were looking at just a few minutes
7 ago -- of your initial report in the case.

8 A I'm looking for the signature page, sir.

9 Q I think if you look at the last page.

04:11:25 10 A Let me look -- I was looking at the back of it. This was
11 March the 16th, 2012, is the date I signed it and submitted it.

12 Q Mr. Bowers, let me make it easy. I'm going to hand you a
13 binder which is similar to the one you had earlier.

14 MR. NICHOLS: This is Plaintiffs' Exhibit Binder 18,
04:11:46 15 your Honor.

16 BY MR. NICHOLS:

17 Q You see that I've given you a copy of 427 right here,
18 Mr. Bowers?

19 A Yes, sir.

04:11:56 20 Q The report is dated March the 15th of 2012, correct?

21 A Correct.

22 Q And by looking at your time records that you kept, we know
23 that you began your substantive work in the case approximately
24 one month earlier, correct?

04:12:13 25 A Correct.

Bowers - Cross/Nichols

1 Q And if we added up the number of hours that are listed on
2 Exhibit 524, Mr. Bowers, do we come up with -- I think you said
3 earlier your estimate is 850 hours -- would we come up with 850
4 hours before you produced your initial report in the case?

04:12:39

5 A No.

6 Q I'm not going to have you check my math, Mr. Bowers, but
7 does it sound reasonable that, instead of 850 hours, that you
8 spent less than 160 hours before you produced your initial
9 report in the case?

04:12:55

10 A That's possible, yes.

11 Q Now, let's look back at Exhibit 528. Do you still have
12 that in front of you? I put up Defendants' Exhibit 524 and you
13 can follow along on the screen.

14 Mr. Bowers, do you remember that in your

04:13:23

15 retention letter with the National Environmental Law Center you
16 agreed that you would document all of the work that you did in
17 connection with your work in the case?

18 THE COURT: What year is this that we're looking at?

19 MR. NICHOLS: This is 2012, your Honor.

04:13:42

20 BY MR. NICHOLS:

21 Q You remember that in your retention letter you said that
22 you would document your work?

23 A Yes.

24 Q Okay. So the Court will have this record to look at it for
25 itself, but you'll agree with me that the items that are listed

04:13:52

Bowers - Cross/Nichols

1 in terms of your work on the entries that predate the creation
2 of your initial report are, number one, review STEERS reports,
3 correct?

4 **A** Yes.

04:14:13

5 **Q** Take the Exxon Baytown Complex tour which occurred,
6 according to your records, on the 29th of February of 2012?

7 THE COURT: Wait, say that again.

8 MR. NICHOLS: Yes, sir.

9 THE COURT: Is it 28th or 29th? The tour looks like

04:14:36

10 it went on the 28th.

11 BY MR. NICHOLS:

12 **Q** So the Court knows -- so the February 28th, 2012, would be
13 the complex tour, right? Correct, Mr. Bowers?

14 **A** Yes, that's what it says.

04:14:49

15 **Q** And then you would have undertaken some additional activity
16 the following day to review your site visit notes on February
17 29th, correct?

18 **A** Yes.

04:15:03

19 **Q** You would have written up your observations from the site
20 visit on the 1st of March, correct?

21 **A** And? Yes.

22 **Q** And then all the way down through March 15th or March 16th
23 when you actually signed the report, the activity that you have
24 listed is either reviewing STEERS reports or revising your
04:15:23 25 opinion, correct?

Bowers - Cross/Nichols

1 **A** Correct.

2 **Q** Mr. Bowers, Mr. Kratka outlined for the Court, I believe,
3 earlier, the things that the National Environmental Law Center
4 itself asked you to do in the case.

04:15:44 5 Do you recall that? Mr. Kratka asking you about
6 that?

7 **A** Do you have a specific item? Perhaps I could address that.

8 **Q** Yes, sir. Do you recall that, among the things that
9 Mr. Kratka outlined for the Court that he asked you to do on
04:15:59 10 behalf of the National Environmental Law Center is to look at
11 the causes of emission events at the Baytown refinery, correct?

12 **A** Yes.

13 **Q** He asked you to look at causes of emissions events, 4,000
14 of them, correct?

04:16:18 15 **A** That's the number that eventually came out after Exxon
16 finally disclosed everything.

17 **Q** Mr. Bowers, before you did your first report in March of
18 2012, you had access to STEERS reports, correct?

19 **A** Yes.

04:16:35 20 **Q** Those STEERS reports contained some of the emissions events
21 that are still at issue in the case, of course, letting go of
22 the ones that the Court has already dismissed, correct?

23 **A** And your point?

24 **Q** I'm asking did you review STEERS reports relating to
04:16:54 25 emission events that were involved in this case before you did

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1 your report?

2 **A** Yes.

3 **Q** And what Mr. Kratka did was he asked you to analyze the
4 cause of those events, correct?

04:17:08 5 **A** Not at that time.

6 **Q** Would you please turn to the first page of your report,
7 your initial report which is Exhibit 427.

8 THE COURT: 427?

9 MR. NICHOLS: Yes, sir.

04:17:44 10 BY MR. NICHOLS:

11 **Q** Mr. Bowers, you wrote in your initial report what the
12 Plaintiffs -- what the National Environmental Law Center asked
13 you to do before you prepared your report, correct?

14 **A** Yes.

04:17:58 15 **Q** And so if we look at that, the Court's already got a copy
16 in front of it. I'll put my copy up on the screen.

17 Numero Uno, the first thing they asked, "I have
18 been asked by Plaintiffs" -- and you understand by "Plaintiffs,"
19 you're referring there to the National Environmental Law Center
04:18:16 20 or its agencies or entities it's working for, the Sierra Club or
21 Environment Texas, correct? That's who is being referred to
22 there as "Plaintiffs," correct?

23 **A** Yes.

24 **Q** So the very first thing that they asked you to do in
04:18:36 25 looking at these STEERS reports, "Is there evidence of common

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1 causes underlying emission events at the Baytown Complex,"
2 correct? These are your words, Mr. Bowers, they're not mine.

3 THE COURT: It says "In preparing my opinion, I've
4 been asked by Plaintiffs to consider these questions." That
5 was number one.

6 THE WITNESS: Yes.

7 BY MR. NICHOLS:

8 Q Now, Mr. Bowers, in terms of your profession, just to kind
9 of get us up to speed of where you are, you've been retired for
10 a number of years, correct?

11 A Yes.

12 Q And at one time, you worked for Bechtel. I think you
13 retired from them in around 2002. Does that sound about right?

14 A That sounds about right. I'd have to refer to the
15 documents.

16 Q Okay. And so, even after your retirement, Mr. Bowers, you
17 were putting yourself out to the public as being someone who
18 "conducted detailed review of emission incidents and identified
19 root causes."

20 Does that language sound familiar?

21 A I do not recall that specific language. Perhaps you could
22 show me where it is.

23 Q All right.

24 THE COURT: What are we looking at now?

25 MR. NICHOLS: I'm going to mark Exhibit 525,

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1 your Honor.

2 BY MR. NICHOLS:

3 Q Mr. Bowers, I'm going to hand you what we've marked as
4 Exhibit 525. And I'll represent to you that this is a LinkedIn
04:20:41 5 page that I myself printed out. If you look at the top, it has
6 a date of February the 11th of 2014.

7 Do you see that?

8 A I do.

9 Q It lists Keith Bowers, correct?

04:20:59 10 A Yes.

11 Q It lists Keith Bowers as what, sir? Would you please read
12 how Keith Bowers is held out on the LinkedIn page?

13 A "Consultant, expert witness on operations for emissions
14 reductions."

04:21:23 15 Q That's not all is it, sir?

16 A That's the title, the first line.

17 Q Yes, sir. But the first line goes on a little bit further,
18 right? That's not the entire first line?

19 A Are you referring to the first paragraph after the --

04:21:36 20 THE COURT: All right. Just put it down. Let's get
21 it moving.

22 Go on.

23 BY MR. NICHOLS:

24 Q So Keith Bowers is listed as "Consultant, expert witness on
04:21:44 25 operations for emissions reduction at National Environmental Law

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1 Center," correct?

2 THE COURT: Isn't that what it says? You got the
3 light -- your pointer.

4 THE WITNESS: Yes.

04:22:01

5 THE COURT: No, Mr. Nichols.

6 MR. NICHOLS: Yes, sir, I do. Let's get it on there
7 and show it to the witness. Now, move it down a little bit.
8 Right up top.

9 That's what you're referring to, correct?

04:22:14

10 Let's see if we can get that focused, it's out of
11 focus. Zoom it in or out and see if we can -- there you go.
12 Okay.

13 THE WITNESS: Yes.

14 BY MR. NICHOLS:

04:22:25

15 **Q** And then, if you go down further, there's a listing as to
16 what this means, "Consultant and expert witness on operations
17 for emissions reduction, National Environmental Law Center,"
18 correct?

19 **A** Yes.

04:22:41

20 **Q** And it says, "January, 2009, to the present, five years,
21 two months."

22 Correct?

23 **A** Yes.

24 **Q** And then it has a description of what it is that this
25 person does, this Keith Bowers does. It says, "Review and

04:22:55

Bowers - Cross/Nichols

1 participate in strategy, development, detailed review of
2 emissions incidents and identify root causes for them and
3 identify prudent practice of," quote, "best in industry," close
4 quote, "performers in refining and petrochemicals."

04:23:19

5 Correct?

6 **A** Yes.

7 **Q** So this language, "identify root causes for emissions
8 incidents," the concept of a root cause is not a foreign concept
9 to you, is it, sir?

04:23:35

10 Is the concept of root cause something that you
11 have worked with over the course of your career?

12 **A** It is.

13 **Q** And just before we finish this, you see here that it lists
14 you as an associate for GHASP, this Galveston Houston Alliance
15 for Smog Prevention that we talked about earlier, correct?

04:23:51

16 **A** Correct.

17 **Q** And then, at the very bottom, just to make sure that we're
18 talking about the same guy, this is the indication of a senior
19 process engineer at Bechtel; is that right?

04:24:09

20 **A** Yes.

21 **Q** Now you have worked around people who have conducted root
22 cause investigations, correct, during the course of your career?

23 **A** Yes.

24 **Q** Mr. Bowers, if, in the course of your career, somebody asks
25 you to derive the root cause of a breakdown of a compressor and

04:24:36

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1 you came back to that person and said, "The root cause of that
2 incident is a compressor," do you think the person that would
3 have given you the assignment would be very happy with you?

04:25:03

4 **A** I can't presume what that person was and what the intent of
5 your question is.

6 **Q** The intent of my question, Mr. Bowers, is, tell the Court,
7 when you're dealing with compressors, just give the Court an
8 idea of the number of components that are associated with any
9 given compressor system.

04:25:21

10 **A** It would range from maybe 50 to several hundred --

11 **Q** Several?

12 **A** -- hundred, depending on the complexity of the compressor.

04:25:39

13 **Q** Yes, sir. And just so the Court understands, I think what
14 you're telling the Court is that you looked not only at the
15 compressor itself but also all of the other operations of the
16 refinery that feed into the compressor in making your compressor
17 list, correct?

18 **A** No, sir.

04:25:53

19 **Q** So I thought you told me that the compressors, from your
20 perspective at the Baytown Complex, were working pretty well but
21 it was the things around the compressor that you had some issue
22 with, correct?

23 **A** No. I said the rotating equipment of the compressor case
24 itself contained in that was working pretty good.

04:26:12

25 **Q** Okay.

Bowers - Cross/Nichols

1 **A** It's the stuff that kept it running, like the fuel pump,
2 the oil pump, the generator.

3 **Q** Right. So what I want you to do is broaden your mind a
4 little bit. So when we're talking about --

04:26:25 5 **A** Why ask me why I should broaden my mind a little bit?

6 **Q** I think the answer is obvious to everybody, Mr. Bowers, but
7 let me just ask you: If we were to take into account all of
8 that equipment that is lumped together in one of those charts
9 that Ms. Rock put together and you reviewed, how many components
04:26:48 10 are we talking about in terms of a compressor system?

11 In other words, if we were to look at each and
12 every one of those line items that are included in those charts
13 that are put together where things are lumped under compressor,
14 how many different components would be included if we were to
04:27:10 15 look at each and every one of those line items?

16 **A** I can't answer that question because it depends totally on
17 the compressor and its installation.

18 **Q** Yes, sir. You understand -- you were in court yesterday, I
19 believe, when Jeff Kovacs was testifying, correct?

04:27:30 20 **A** I was sitting as an observer for some of the time, yes.

21 **Q** And were you actually sitting here when Jeff Kovacs went
22 through that report, I believe it was on Exhibit 20W, that was
23 also shown earlier today, the one dealing with the pinhole leak
24 under the insulation? The 18-page -- were you here, Mr. Bowers?

04:27:58 25 **MR. KRATKA:** Objection. Give the witness a second to

Bowers - Cross/Nichols

1 answer. He's thinking about your question.

2 THE COURT: Were you here at that time, sir?

3 THE WITNESS: Yes, sir, I was.

4 THE COURT: Okay.

04:28:07 5 BY MR. NICHOLS:

6 Q So you saw a very detailed, 18-page root cause
7 investigation, right?

8 A Yes.

9 Q You saw a very detailed analysis, not only of root cause,
04:28:15 10 but corrective actions, correct?

11 A Yes.

12 Q And that is a type of analysis that when you're actually
13 working at a plant to that level of complexity, that level of
14 detail, that you go to in determining root cause, correct?

04:28:36 15 A That is what is used at Exxon.

16 Q Yes.

17 A That is, apparently, their standard.

18 Q Yes.

19 A But I would add that they missed the cause.

04:28:47 20 Q Okay. All right. We'll get back to that, Mr. Bowers.

21 I'm talking to you about the concept of doing a
22 root cause investigation.

23 A That is Exxon's concept of a root cause investigation.

24 Q Right. And your content of a root cause investigation -- I
04:29:01 25 just want to understand where you're coming from and for the

Bowers - Cross/Nichols

1 Court to understand. Your concept of a root cause investigation
2 is to say if we had a breakdown due to human error, due to one
3 of hundreds of components on any particular piece of compressor
4 equipment caused by whatever source that I can put that all in a
5 list that's called compressor and say all those events had the
6 same root cause?

04:29:26

7 MR. KRATKA: Objection, your Honor. Completely
8 mischaracterizes and misstates his testimony, the way he used --
9 by starting with compressors and moved on to associated causes.

04:29:42

10 THE COURT: Overruled.

11 Answer the question. It's cross examination.

12 THE WITNESS: Would you please repeat the question.

13 MR. NICHOLS: I will try my best.

14 THE COURT: Make it simple. Break it down.

04:29:49

15 BY MR. NICHOLS:

16 Q So we've got ExxonMobil's way of determining root cause
17 which we've determined from the example, 20W?

18 THE COURT: Go on.

19 BY MR. NICHOLS:

04:30:01

20 Q Is the method -- Keith Bowers' method of determining root
21 cause to take any event involving any component of a compressor,
22 involving any type of myriad human errors, involving any one of
23 a number of sources for the breakdown and to put it on a list
24 called compressor and say that all of those events have the same
25 root cause?

04:30:29

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1 Is that the Keith Bowers' method?

2 **A** You put the label on something that has been totally
3 mischaracterized, sir, by you.

4 **Q** Okay. Let's break it down then.

04:30:45

5 One of the issues that you talked about first, I
6 think, one of your common cause issues concerned leaks, correct?

7 **A** I prepared a table from Exxon information that lumped all
8 things that Exxon called leaks --

9 **Q** Yes. And --

04:31:04

10 **A** -- into a common table.

11 **Q** And to be more precise and more fair to everybody, you
12 asked Ms. Rock at the National Environmental Law Center to put
13 together a list of events that had the word "leak" somewhere in
14 a report that Exxon had produced, correct?

04:31:20

15 **A** For that specific event.

16 **Q** Yes, sir. So in other words, if Exxon had produced a
17 report on an emissions event that had the word "leak" in it,
18 your direction to Ms. Rock was "Put that on the list," right?

04:31:42

19 **A** To include it in the list because that's what Exxon had
20 called it.

21 **Q** Yes, sir. And so if we look at that list that you had
22 Ms. Rock prepare -- and by the way, I think you told me that, at
23 the time of your deposition, you had adopted certain tables that
24 had been made by Ms. Rock, correct?

04:32:05

25 **MR. KRATKA:** Objection to the term "adopted."

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1 THE COURT: I can't hear you, sir.

2 MR. KRATKA: Objection --

3 THE COURT: To what?

4 MR. KRATKA: -- to the term "adopted."

04:32:13 5 THE COURT: All right. Rephrase it.

6 BY MR. NICHOLS:

7 Q When you produced that initial report that we just looked
8 at one month after you started doing some work, you had certain
9 what you considered to be common cause tables attached to that
04:32:28 10 initial report, correct?

11 A I don't recall. I'll have to -- you'll have to show me the
12 document.

13 Q Mr. Bowers, I'm going to mark as Defendants' Exhibit 526 a
14 complete copy of your initial report in the case?

04:34:05 15 THE COURT: Don't we have it in here? Isn't that that
16 whole volume, basically? 18, something like that, isn't that
17 what -- isn't that in here? Is that the same report?

18 MR. KRATKA: It should be.

19 MR. NICHOLS: I don't believe that they marked the
04:34:22 20 entire report, Judge.

21 THE COURT: 430, yeah. 430 is up here.

22 MR. NICHOLS: But they don't have the attachments on
23 there, I don't believe, your Honor. Let me check.

24 MR. KRATKA: 430? Which one are you looking at?

04:34:36 25 MR. NICHOLS: I do not believe they have the initial

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1 report.

2 MR. KRATKA: Your Honor, in the Plaintiffs' exhibit
3 binder, Mr. Bowers' -- the text of Mr. Bowers' initial report
4 was produced as an exhibit.

04:34:54 5 THE COURT: I can't -- speak up a little bit.

6 MR. KRATKA: I'm losing my voice.

7 THE COURT: I know. Me, too. But go on.

8 MR. KRATKA: The text of his initial report is Exhibit
9 427. The attachments to that initial report are not included
04:35:09 10 because they've been superseded by the attachments in the
11 revised report.

12 THE COURT: Well, it's a revised supplemental opinion
13 which is 430.

14 MR. KRATKA: Yes. Yes. And that contains his
04:35:21 15 complete --

16 THE COURT: Is that -- is that what we're going on?

17 MR. KRATKA: I don't know.

18 THE COURT: Okay. You're looking at a prior one to
19 that?

04:35:26 20 MR. NICHOLS: I'm looking at the report that he
21 produced on March 15th of 2012, which I don't think they've
22 introduced, your Honor.

23 THE COURT: The one in here, in the book, is January
24 15, 2013?

04:35:36 25 MR. KRATKA: Yes. That is the current report but we

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1 also introduced the text of the initial report which is 427.
2 It's about 20 pages long.

3 THE COURT: Yeah. Okay.

4 MR. KRATKA: We did not include the original tables
04:35:51 5 attached to that report because those tables have been updated
6 and superseded by the revised report.

7 THE COURT: Okay. Okay.

8 MR. NICHOLS: So what I've marked, your Honor, as 526,
9 is the initial report with the initial attachments in the case.

04:36:01 10 THE COURT: Okay.

11 BY MR. NICHOLS:

12 Q And Mr. Bowers, if you look through --

13 THE COURT: Hold it. Any objection?

14 MR. KRATKA: Well, yeah. The objection is that the
04:36:14 15 report itself is still being put forward as Mr. Bowers' opinion
16 but we're no longer relying on any of those attachments because
17 they're -- they've been superseded by different --

18 THE COURT: This comes in in litigation very often.
19 Say, Let me look at your original complaint. And the objection
04:36:29 20 comes, Well, we're now on the fourth amended complaint.

21 So to that extent, I'm going to allow -- allow
22 him to talk about it, understanding that it has been superseded.

23 But for whatever cross examination purposes.
24 What number is that?

04:36:42 25 MR. NICHOLS: That is Exhibit 526, your Honor.

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1 THE COURT: Are you offering that?

2 MR. NICHOLS: I am.

3 THE COURT: All right. I'm going to allow it in and
4 just for the purposes of the cross examination.

04:36:50

5 BY MR. NICHOLS:

6 Q So Mr. Bowers, would you look at your initial report from
7 March 15th, 2012, and confirm for us that that initial report
8 had lists of events that you attributed to common causes?

9 THE COURT: Common causes?

04:37:11

10 MR. NICHOLS: That's the question, your Honor.

11 THE COURT: Why don't you point him to the page if you
12 have to.

13 BY MR. NICHOLS:

04:37:42

14 Q Mr. Bowers, would you agree that as Attachment C to your
15 report that was produced in March 15th of 2012, you included a
16 table entitled "Booster Station 4 at the Refinery," correct?

17 A I still don't see -- can I see where -- yes.

18 Q That you included a list of flexicoker units at the
19 refinery similar to the one that you showed the Court earlier
20 today?

04:38:13

21 A Yes.

22 Q You included one entitled "Fluid Catalytic Cracking Unit 2
23 at the Refinery" similar to the one that you showed the Court
24 today, correct?

04:38:28

25 A Yes.

Bowers - Cross/Nichols

1 Q "Fluid Cracker Unit Number 3 at the Refinery," similar to
2 the one you showed the Court today, correct?

3 A Yes.

4 Q "Catalytic Light Ends Unit at the Refinery" similar to what
5 you showed the Court today, correct?

6 A Yes. Are we going to go through these page by page by
7 page? It's your time.

8 Q And then we're going to go to Attachment E. You attached
9 an Attachment E to your report, your March 15, 2012, report,
10 correct?

11 A Yes.

12 Q Attached to Attachment E is a list entitled what, sir?

13 A "Compressor Failure."

14 Q Yes, sir. And attached to Attachment E, you have a list
15 entitled "Regenerators," correct?

16 A Yes.

17 Q "Mechanical Failures," correct? And if we go back further
18 enough --

19 MR. KRATKA: Your Honor, I'm going to assert the
20 continuing objection to the fact that these have all been
21 superseded.

22 THE COURT: Well, I'm assuming he'll link up
23 something. Okay.

24 BY MR. NICHOLS:

25 Q And you have a chart entitled "Leaks," correct?

Bowers - Cross/Nichols

1 **A** Yes.

2 **Q** Similar to the one that you talked to the Court about
3 earlier today, correct?

4 **A** I would have to compare them --

04:40:01 5 **Q** Yes, sir.

6 **A** -- page by page.

7 **Q** They are similar to the extent that, in each of these
8 charts that you put forward on March 15th of 2012, you put forth
9 charts that had lists of events that you said had common causes,
04:40:21 10 correct?

11 **A** That was the label on it, yes.

12 **Q** Yes, sir. And as to these charts that Ms. Rock prepared,
13 you told me in your deposition that, as of the time that report
14 was finalized, that you checked some entries but not all of
04:40:43 15 them, correct?

16 **A** Correct.

17 **Q** Now, what I want to do, Mr. Bowers, is go through some of
18 the charts that Mr. Kratka walked you through earlier today.

19 THE COURT: Now, are these attached to his final
04:40:59 20 report or is this the original report or what?

21 MR. NICHOLS: Yes, sir. And we can go back --

22 THE COURT: As to what?

23 MR. NICHOLS: -- as we need to.

24 THE COURT: Both?

04:41:05 25 MR. NICHOLS: No. I'm looking now at Exhibit 436,

Bowers - Cross/Nichols

1 your Honor, which is the updated leaks chart. In other words,
2 Mr. Bowers had a leaks list in his initial report and, as I
3 understand it, 436 is the one that he has updated.

4 THE COURT: With the graph?

04:41:26 5 MR. NICHOLS: Yes, sir.

6 THE COURT: All right.

7 THE WITNESS: I don't seem to have that here. Could
8 you please provide me a copy of it.

9 THE COURT: 436.

04:41:37 10 MR. NICHOLS: Yes, 436.

11 THE COURT: Well, it's a Plaintiffs' exhibit. You got
12 a copy of it for him.

13 Somebody?

14 BY MR. NICHOLS:

04:42:21 15 Q And this is the chart that you went through briefly with
16 Mr. Kratka called, at the top -- you see I'm now looking at page
17 7-3, Mr. Bowers? It has a title "Common Cause: Leaks."

18 Correct?

19 A It appears to be the same.

04:42:46 20 Q Okay. So this is the type of list that you have put
21 together for purposes -- or I'm sorry, Ms. Rock has put together
22 and you've reviewed for purposes of the case that attempt to
23 group, in your professional judgment, events that result from
24 the same root cause, correct?

04:43:11 25 A No. You say "root cause." "Root cause" definition by

Bowers - Cross/Nichols

1 Exxon is totally different than root cause analysis on my part
2 for this case.

3 Q Okay. So let's figure out exactly, for the Court's
4 benefit, what definition of root cause we're using.

04:43:30

5 People out in the field, Mr. Bowers, not people
6 in lawsuits, people in the field, men and women working at these
7 plants every day, when they want to get to the root cause of an
8 event, what do they do?

04:43:50

9 MR. KRATKA: Objection. I'm not sure who you're
10 expecting him to describe.

11 MR. NICHOLS: He's --

12 MR. KRATKA: You're asking him to describe what Exxon
13 does.

14 THE COURT: Overrule the objection.

04:43:59

15 MR. NICHOLS: The man's been -- I'm sorry.

16 THE WITNESS: Would you please state the question
17 again?

18 BY MR. NICHOLS:

04:44:11

19 Q Yes. If a man or a woman who is a technical person, a
20 process technician at a plant, is asked to evaluate an event and
21 get to the root cause of what happened, what are they going to
22 do?

23 THE COURT: You mean where do they start or what?

24 MR. NICHOLS: Yeah. Sure.

04:44:26

25 //

Bowers - Cross/Nichols

1 BY MR. NICHOLS:

2 Q Where do they start? What do they do?

3 A I can't answer that question.

4 Q Have you ever been involved in a root cause analysis at a
04:44:35 5 facility?

6 A I've been involved in many --

7 Q So give the Court --

8 A -- in numerous facilities and the depth of investigation
9 varies depending on what you're hunting for.

04:44:46 10 Q Sure. If you're trying to figure out what caused an event
11 and try to avoid it from happening again, are you going to stop
12 at the level of just saying it's a compressor event?

13 A That may be quite appropriate for the particular
14 investigation.

04:45:01 15 Q So are you suggesting to the Court that, in the normal
16 practice of a refinery that if there is a failure of equipment
17 involved on a compressor system, that it is adequate for
18 somebody to come back and say, "Hey, it was a compressor"?

19 MR. KRATKA: Objection. It's mischaracterizing his
04:45:31 20 testimony and there's no specific incident for him to evaluate.

21 THE COURT: He said he'll link it up. So overrule the
22 objection.

23 THE WITNESS: Would you please restate the question?

24 BY MR. NICHOLS:

04:45:43 25 Q Yes, sir.

Bowers - Cross/Nichols

1 If you are working at a plant and there is a
2 failure involving a piece of equipment associated with a
3 compressor, in your professional judgment would it ever be
4 appropriate for somebody to come back and say as the root cause
5 it was a compressor?

04:46:05

6 **A** Yes. If that's what he had been asked to do. He had not
7 been asked to specify the particular piece of tiny equipment
8 inside the compressor, such as the root of blade 23 in wheel 7
9 developed a fatigue crack.

04:46:27

10 **Q** Yes, sir, but --

11 **A** It was the compressor that failed.

12 **Q** Yes, sir. But use your example. If you really wanted to
13 drill down and figure out what caused that particular issue, you
14 would have to drill down to that level of detail that you just
15 mentioned, correct?

04:46:41

16 **A** To determine the cause of the failure of blade 7 in wheel 5
17 at the root, probably.

18 **Q** Yes, sir. And in order to --

19 **A** If I were interested in that level of detail.

04:46:52

20 **Q** Yes, sir. You understand that in this case, we should be
21 -- we are interested in details. Do you understand that?

22 **A** I do not understand your persistence in saying, well, which
23 specific piece, nut, bolt, washer, or whatever, failed?

24 **Q** Okay.

04:47:10

25 **A** I look at it as a process engineer. The system failed.

Bowers - Cross/Nichols

1 Q Okay.

2 A The compressor system failed.

3 Q Okay. So whenever a compressor system fails in any shape,
4 form, or fashion, whether it's somebody hitting the wrong switch
04:47:25 5 or a piece of equipment fails, a component fails, a
6 manufacturing defect occurs, by golly, it doesn't matter to
7 Keith Bowers, that's a common cause, right?

8 MR. KRATKA: Objection. That's not a question.

9 THE COURT: Overruled.

04:47:39 10 THE WITNESS: From the perspective of my assignment,
11 it was did it cause or not cause an emission event.

12 BY MR. NICHOLS:

13 Q Yes, sir. So let's just make sure to ratchet this down for
14 the Court. We're looking at Exhibit 2 -- 436.

04:48:00 15 Talk -- the very first entry is a recordable,
16 it's got a Bate's number, process unit is sour water unit. This
17 is -- says, "Flaring due to T-853 safety leak."

18 Mr. Bowers, what was the cause of that leak?

19 A I have no idea. And from my perspective, it does not
04:48:22 20 matter. It leaked, caused an emission event.

21 Q So if I were to take the time to go through with you all of
22 these charts that you've put before the Court as emanating, as
23 issues, events that occurred due to a common cause, if I were to
24 take the time to go through every line item, your answer would
04:48:44 25 be the same? If I asked you what was the cause of this event,

Bowers - Cross/Nichols

1 you would tell me, "For purposes of my analysis, it doesn't
2 matter, correct"?

3 **A** Not necessarily, sir. If you would care to go through them
4 line by line, I will give you my best answer; but I cannot take
5 a general broad statement like that and agree with it.

04:49:00

6 **Q** Well, you would agree with me that nowhere in your work in
7 the case have you drilled down to that level of detail on any
8 particular event, correct?

9 **A** No, not correct.

04:49:14

10 **Q** Okay. So give us a list, Mr. Bowers, because we're trying
11 to keep some lists of events that -- where we get that level of
12 detail. Give me a list of events on which you did a detailed
13 analysis of the event, beyond having Ms. Rock look at various
14 reports and including in a chart any that had the word "leak" in
15 it.

04:49:46

16 **A** Is that a question, sir?

17 **Q** Yes, sir. I'm asking you to give us -- so we can address
18 specific events, give me a list of events that you have, in
19 fact, analyzed for root cause rather than lists of events
20 prepared by Ms. Rock under the instructions put together a list
21 everything that has the word "leak" in it.

04:50:08

22 MR. KRATKA: Objection. Compound question.

23 THE COURT: Sustained.

24 BY MR. NICHOLS:

04:50:25

25 **Q** Early on in your testimony with Mr. Kratka, Mr. Bowers, you

Bowers - Cross/Nichols

1 mentioned that Mr. Kratka actually asked you about that root
2 cause analysis that Exxon had done that you saw the example of
3 and you said -- I believe you said that you had been -- you had
4 received a couple of those root cause analyses from Exxon,
04:50:47 5 correct?

6 **A** I think I said that. I think -- I -- I'm not sure if
7 that's the exact wording, but something of that nature.

8 **Q** Okay. So can you give me that couple. So which two events
9 did you receive the root cause analysis on?

04:51:05 10 **MR. KRATKA:** Objection. Your Honor, Mr. Nichols is
11 asking Mr. Bowers to reproduce from memory the in-depth analyses
12 of specific events that he outlined in three different reports.
13 If he has a question about a specific analysis of any of those
14 events, he should point them out and ask him about it.

04:51:22 15 **THE COURT:** Are you, Mr. Nichols, inquiring as to, you
16 know, the general reporting; that if it's a compressor, there
17 was no details within that and that should be the root cause
18 analysis in the trade -- in the trade and business that this man
19 is in?

04:51:35 20 **MR. NICHOLS:** That --

21 **THE COURT:** That in order to do it, you need to get
22 down to another level?

23 **MR. NICHOLS:** Yes, sir. And that --

24 **THE COURT:** Rather than just say that what's the
04:51:42 25 matter, what happened to this: The compressor failed?

Bowers - Cross/Nichols

1 MR. NICHOLS: Yes, sir. That's the point. And the
2 second point is that I'm asking him if he can identify for me if
3 he ever went beyond that. That's where this whole -- he said --

4 THE COURT: If he ever went beyond that.

04:51:56

5 MR. NICHOLS: If he ever went beyond that and, if so,
6 give me those events.

7 MR. KRATKA: And my objection is that those specific
8 detailed in-depth analyses are included in all three reports
9 that he's provided. So they're right there. They're in the
10 record. If you have a question about any of those in-depth
11 analyses that he wrote up and gave you, ask him about it rather
12 than have him recite from memory STEERS numbers for days.

04:52:12

13 MR. NICHOLS: Well, I think we're supposed to address
14 the Court rather than counsel, but --

04:52:29

15 THE COURT: Go on.

16 MR. KRATKA: I apologize.

17 MR. NICHOLS: I think the Court can understand my
18 question. He can do it or he can't.

19 THE COURT: Well, he said he has on some instances.

04:52:39

20 Is that correct?

21 THE WITNESS: That is correct, Your Honor.

22 THE COURT: Okay. But you can't find them offhand
23 right now.

24 THE WITNESS: I do recall one from memory because it
25 was unusual.

04:52:45

Bowers - Cross/Nichols

1 BY MR. NICHOLS:

2 **Q** Yes, sir.

3 THE COURT: Why don't you talk about that one.

4 MR. NICHOLS: Yes, sir.

04:52:48 5 THE COURT: What -- what was that about?

6 THE WITNESS: That had to do with the thermal wells in

7 a processing unit -- hydroprocessing thermal wells in an

8 exchanger train that were of the inappropriate alloy. And

9 detailed analysis by Exxon showed, through metallurgical

04:53:01 10 analysis, the intergranular -- intergranular means between the

11 grains -- corrosion of that alloy and then went on to recommend

12 immediate replacement of those said thermal wells and also share

13 that information with other Exxon refineries.

14 BY MR. NICHOLS:

04:53:22 15 **Q** Sure. And so do you recall a general date of this
16 particular event?

17 **A** Sometime in this century. If you wish to be more specific,

18 I would have to review the -- and see where this -- I remember

19 the technical details of this one because they were provided and

04:53:40 20 it was a personal interest.

21 **Q** So and did you discuss this particular incident in one of
22 your reports?

23 **A** Yes.

24 **Q** Okay. So I'm going to give you access and you have access

04:53:50 25 right in front of you to your supplemental opinion dated

Bowers - Cross/Nichols

1 November 22, 2013. Would it be in that report?

2 **A** I don't recall.

3 **Q** Okay. Let me show you in that binder where it is.

4 **A** And by the way, I think that was a good piece of work by
04:54:14 5 Exxon, that particular one.

6 **Q** So what you're telling the Court is you -- was that one of
7 those examples where you had the root cause analysis?

8 **A** Yes.

9 **Q** And so, after reviewing the actual root analysis, your
04:54:27 10 conclusion was that Exxon did a good job?

11 **A** They did a good job of finding out what happened.

12 **Q** Okay.

13 **A** They did a poor job of selecting the alloy originally.

14 **Q** Okay. I've put before you, Mr. Bowers, Exhibit 430 which
04:54:44 15 is your revised supplemental opinion dated January 15, 2013.

16 And can you identify for me in that report, look
17 through there and see if you can find the date of that
18 particular incident that you were talking about.

19 THE COURT: Okay. Anybody know what the date is?

04:55:01 20 Anybody?

21 Staff?

22 Lawyers?

23 Anybody?

24 MR. ALEXANDER: Your Honor, it's January 6th, 2011.

04:55:10 25 THE COURT: January 6th, 2011. Oh, wait. Hold it.

Bowers - Cross/Nichols

1 Hold it. You know, that's the defense talking.

2 Do you agree with that? I'll look it up. Where
3 can I find it?

4 MR. ALEXANDER: We can get you the STEERS -- it will
04:55:25 5 take me a minute. I can pull up that STEERS file, your Honor.

6 THE COURT: Please.

7 MR. NICHOLAS: What exhibit are you looking at?

8 MR. ALEXANDER: I don't -- the exhibit number, I don't
9 have handy.

04:55:35 10 THE COURT: You can do it by STEERS number. So look
11 it up.

12 MR. ALEXANDER: Okay.

13 THE COURT: Please.

14 BY MR. NICHOLS:

04:55:37 15 **Q** So we've got that one incident. And this involved an
16 incident at what unit, sir?

17 **A** It was a catalytic hydroprocessing unit. I don't remember
18 which one. It's apparent the feedstock had changed from the
19 designed conditions.

04:55:51 20 THE COURT: The what, the feedstock?

21 THE WITNESS: The feedstock. What they were feeding
22 in to process was different than what the unit was originally
23 designed for.

24 BY MR. NICHOLS:

04:56:00 25 **Q** And so in that particular instance, you went beyond the

Bowers - Cross/Nichols

1 categorization of -- first of all, would this have fallen in one
2 of the summary charts that you --

3 **A** Yes.

4 **Q** -- did in the case?

04:56:10 5 What summary chart would it have fallen under?

6 **A** Leaks. It leaked.

7 **Q** And so we can actually look at then --

8 THE COURT: You know something, you find it. It's now
9 4:57. This will be our short break. We'll get back in at 5:05.

04:56:33 10 We'll get -- we'll get it and we'll move on. Okay. See you
11 back in about eight minutes.

12 (Court recessed at 4:56 p.m.)

13 (Court resumed at 5:07 p.m.)

14 THE COURT: All right. Go right ahead, please.

05:08:01 15 BY MR. NICHOLS:

16 **Q** Mr. Bowers, we're referring now to Exhibit 436 which is the
17 list that you provided the Court -- or Ms. Rock wrote that you
18 reviewed, 436, "Common Cause: Leaks."

19 And I think we've tracked down the one that you
05:08:17 20 may have been referring to. If you want to look at the screen
21 or you can look at your book, it's 7-42. That's the page.

22 THE COURT: All right. Point it out. Which one is in
23 there?

24 BY MR. NICHOLS:

05:08:38 25 **Q** See, I'm referring to an event that is listed at 1/6/2011,

Bowers - Cross/Nichols

1 correct?

2 **A** Yes, that's the one. When I said I reviewed STEERS, I --
3 that's the entire file, all the findings, correspondence,
4 everything.

05:09:04 5 **Q** Yes. And so, you referred to this as earlier as being the
6 cat --

7 **A** I think I said a hydroprocessing unit --

8 **Q** Right. So this --

9 **A** -- from memory.

05:09:17 10 **Q** Right. And that corresponds -- this entry corresponds to
11 what you were referring to, correct?

12 **A** Yes, sir. This is a hydroprocessing unit, a naptha
13 hydroprocessing unit.

14 **Q** So this is one of the events that is listed in your "Common
05:09:34 15 Cause: Leak" table for which you actually reviewed a root cause
16 analysis done by Exxon and came to the expert conclusion that
17 they did a good job of determining the root cause, correct?

18 **A** As I said in my side bar, yes.

19 **Q** Okay.

05:09:50 20 **A** They did a thorough job of determining the root cause or
21 the failure, which turned out to be the wrong material was
22 installed.

23 **Q** Sure. And was corrective action taken with respect to
24 that?

05:10:02 25 **A** It was documented that it was to be taken. Was it taken, I

Bowers - Cross/Nichols

1 have no idea.

2 **Q** Okay. So -- and with respect to any other events that you
3 analyzed, specifically, above and beyond looking at a listing in
4 one of these common cause tables, would each and every one of
05:10:25 5 those events be discussed in the text of one of your reports?

6 **A** Not necessarily.

7 **Q** Okay. And so that's exactly why I need to ask the
8 questions I'm asking, which is: Please give us a list of the
9 events that you would have analyzed specifically by going beyond
05:10:48 10 the mere listing in the Mary Rock tables.

11 **A** Well, let me ask you if you would provide me a list of the
12 STEERS events which included the Exxon root cause analysis.

13 **Q** Sir, is there anything, any work product that you produced
14 in the case, where either the Court or myself can go to? A list
05:11:13 15 prepared by Keith Bowers that says, "I reviewed these events in
16 detail," beyond just having them listed on one of Mary Rock's
17 tables?

18 **MR. KRATKA:** Are you asking him to go through his
19 report?

05:11:30 20 **THE COURT:** No. No. He's asking -- let's take it
21 question by question.

22 **THE WITNESS:** I have not produced a list of such
23 events.

24 **BY MR. NICHOLS:**

05:11:36 25 **Q** Okay.

Bowers - Cross/Nichols

1 THE COURT: Okay. Next question.

2 BY MR. NICHOLS:

3 Q And so from memory, we've identified the January 26, 2011.

4 Can you please identify any others for us that
05:11:47 5 you reviewed in depth beyond this one?

6 A Only by reviewing the STEERS events or perhaps one in my
7 report mentions it. I believe the exchanger leak on the olefins
8 plant included some more in-depth analysis.

9 Q Okay. And so that would have been a leak that occurred at
05:12:07 10 the olefins plant?

11 A Yes, sir. If it was included in the STEERS event
12 documentation, I read it.

13 Q Okay. And is there anywhere that the Court would have or
14 that we would have -- every document that you reviewed in the
05:12:20 15 case, have you listed by Bate's number in one of your reports?

16 In other words, have you listed the Bate's number
17 range, the document number range of all the documents you
18 reviewed in the case?

19 A I don't know.

05:12:36 20 Q Okay.

21 A I'll have to ask. I don't know the entire range of Bate's
22 document numbers.

23 Q Sir, what I'm asking you is for the Court's -- you said to
24 the Court, generally, that you reviewed -- what -- about 20,000
05:12:51 25 documents or 20,000 pages of documents or --

Bowers - Cross/Nichols

1 **A** A big, long list. As I said, 20,000, 40,000. The pile is
2 high.

3 MR. KRATKA: And, your Honor, in our expert
4 disclosures, we provided the Bate's ranges of all the documents
05:13:05 5 that Mr. Bowers reviewed.

6 THE COURT: Go on.

7 BY MR. NICHOLS:

8 **Q** Okay. So with respect to these charts, Mr. Bowers, I want
9 to go through just one more -- one or two more with you. You
05:13:33 10 had a chart that lists "Common Causes: Fires." And if you want
11 to look at your book, it's 438, Plaintiffs' Exhibit 438.

12 **A** Is that Page 9-1?

13 **Q** Yes, sir. We can start there. So what you've done in this
14 chart, Mr. Bowers, is you asked Ms. Rock to put together a
05:14:01 15 list -- just like for leaks -- put together a list of every
16 entry, in either a recordable entry or a STEERS Report, where
17 the word "fire" is mentioned. Is that how it worked?

18 **A** It is where Exxon characterized the event as "fire" or
19 "unplanned combustion."

05:14:23 20 **Q** Okay. So the key words were "fire" or "unplanned
21 combustion"?

22 **A** Those were the discriminators used.

23 **Q** Okay. And so let's look at a few of these. On the first
24 page you got four recordable events, correct? Right?

05:14:41 25 **A** Yes. That's clearly shown.

Bowers - Cross/Nichols

1 Q And the duration of these events is shown in the far
2 right-hand column, correct?

3 A Yes. That's from the STEERS event.

05:14:57

4 Q So this one, this recordable event involves a furnace fire
5 that lasted 1.43 hours, correct?

6 A That's what it says.

7 Q So, what was -- so just as with the other analysis, so what
8 was the root cause of this furnace fire that caused these
9 emissions to the atmosphere?

05:15:14

10 A The tube was old and ruptured from creep stress.

11 Q So it was a tube failure?

12 A Yes, in this case.

13 Q Next, flexicoker, date is November the 16th of 2005.

14 A Oh, the infamous smoking board.

05:15:38

15 Q The duration is .33 hours, correct?

16 A Well, this is a different one. Yes, go ahead.

17 Q The duration is what?

18 A 20 minutes.

19 Q A third of an hour. Okay. So what is the root cause?

05:15:52

20 What was the root cause of that second item listed there?

21 A Was not listed in the documentation, but I presume it was a
22 board was put up against a piece of hot pipe. It says,
23 "scaffolding board," and they -- they're not going to catch fire
24 sitting in the air.

05:16:12

25 Q Right. So let's just take those first two entries as

Bowers - Cross/Nichols

1 examples. First entry was a tube failure?

2 **A** This is one of the heating tubes inside the -- has the
3 process fluid inside it under high pressure --

4 **Q** Right.

05:16:24 5 **A** -- fire on the outside. And the tube ruptured due to creep
6 stress --

7 **Q** And so --

8 **A** -- they ran it too long. It was too old.

9 **Q** Okay. So it was a piece of equipment that failed, correct?

05:16:35 10 **A** Yes.

11 **Q** Okay. The second example is caused by somebody putting a
12 board up against a hot piece of metal?

13 **A** Presumably. It was not identified any further than that.
14 But reason and rationality says board on scaffolds don't catch
05:16:54 15 fire.

16 **Q** So the placement of that board against the hot piece of
17 metal, you would characterize that as being a human error,
18 correct? That's something -- somebody shouldn't have done that,
19 if that's what happened, right?

05:17:08 20 **A** That goes without saying.

21 **Q** Sure. The board didn't just leap over and touch the metal,
22 right?

23 **A** I wasn't there to witness the event. I can't say how it
24 got in contact with it.

05:17:18 25 **Q** So just to make sure that the Court understands exactly

Bowers - Cross/Nichols

1 what's in these charts, that is an example of two different
2 events that you have put together on a chart that has at the top
3 the word "common cause," correct?

4 **A** Yes.

05:17:39 5 **Q** Okay. And if we look at your -- back at your report which
6 has been marked as Plaintiffs' Exhibit 427 --

7 **A** Where will I find it? These are your books, I think.

8 **Q** Here I'll help you.

9 **A** It's exhibit what? It's not here. Unless it's earlier.

05:18:14 10 428? Yeah. It's going to be right there.

11 **Q** Yes, sir. See, each of these has --

12 **A** Boy, we killed a lot of trees.

13 **Q** So Exhibit 427, again, is the -- that's the initial report
14 that you would have created in -- on March 15th of 2012,

05:18:52 15 correct?

16 **A** Yes.

17 **Q** And so -- just so that -- to ratchet this down for the
18 Court, on the very first page, as of March 15th of 2012, which
19 was -- we agree was roughly 30 days after you started your
05:19:11 20 substantive work in the case --

21 **A** Well, let me correct that: 30 days after I started
22 billing.

23 **Q** Yes, sir. It says, "TCEQ documents I reviewed of numerous,
24 common, or recurrent causes of emission events."

05:19:26 25 Correct?

Bowers - Cross/Nichols

1 **A** Yes.

2 **Q** "These included numerous leaks in pipes, seals, other types
3 and loss of containment, compressor trips, electrical failures,
4 shutdowns, releases, control valve failures, other equipment
05:19:43 5 failures due to cold weather and particular process units."

6 Correct?

7 **A** So stated in there, so written.

8 **Q** You mentioned that you began billing for work in February
9 of 2012. Were you -- were you working for free before that?

05:20:01 10 **A** Yes.

11 **Q** Okay. So how many hours did you work for free before that
12 time?

13 **A** I didn't count. It was several weeks --

14 **Q** Okay.

05:20:08 15 **A** -- and then I realized this was going to be a big damn
16 deal.

17 **Q** By the way, you also mentioned that you have about 850
18 hours in the case?

19 **A** Billable hours, yes, sir.

05:20:19 20 **Q** Have you tracked those hours?

21 **A** More or less.

22 **Q** Do you have records of those hours?

23 **A** Different level of records.

24 **Q** Do you have -- how much time have you billed to the
05:20:28 25 Plaintiffs in this case?

Bowers - Cross/Nichols

1 **A** I have not yet billed.

2 **Q** So you have not billed any amount of work to the Plaintiffs
3 in the case?

4 **A** That is correct. I have not invoiced them yet.

05:20:44 5 **Q** You have not sent an invoice to the National Environmental
6 Law Center for any work that you've done in the case?

7 **A** I think that's what I just said.

8 **Q** Okay. Why not?

9 **A** That's none of your business. None of the Court's
05:20:59 10 business. That's my business.

11 **Q** I -- I guess it's up to the Court to figure out. Why
12 haven't you sent a bill to the National Environmental Law Center
13 for your work?

14 **A** We're getting into a personal tax area and I'd ask the
05:21:21 15 Court's forbearance. I'd be happy to tell the Court in private.

16 THE COURT: Do you want to move on or do you want to
17 force it?

18 MR. NICHOLS: I'll -- I'll move on, your Honor.

19 THE COURT: Okay.

05:21:35 20 BY MR. NICHOLS:

21 **Q** Now, with respect to this report that was done on
22 March 16th, 2012, after you had spent the amount of time that
23 we've talked about, you made certain statements, did you not,
24 Mr. Bowers, about the Baytown Complex?

05:21:54 25 **A** Can you show me the statement, please.

Bowers - Cross/Nichols

1 Q Yes, sir. Do you remember saying that "Folks out at the
2 Baytown Complex are playing Russian roulette with the facility"?

3 A Would you please show me the document where that's said.

4 Q Well, let's just start -- start where we can start. So
05:22:12 5 Page 9, under Sub-header 3.4.

6 A Of? Of?

7 Q Of your report which is March 15, 2012, 427, under the tab
8 in the notebook that's in front of you.

9 A And the reference again, please. I forgot.

05:22:33 10 Q Page 9, Section 3.4.

11 And what you did in your report that you did 30
12 days after you started billing for your time in the case, you
13 made a conclusion, did you not, Mr. Bowers, that "Exxon
14 management has not put a priority on preventing upset events and
05:23:10 15 unauthorized air emissions."

16 Is that what you said?

17 A Could you show me specifically where.

18 Q Right underneath the first -- the header right there, 3.4.

19 THE COURT: "It is my conclusion" --

05:23:22 20 THE WITNESS: Yes, sir. Yes, sir, that's true.

21 BY MR. NICHOLS:

22 Q And you made that statement based on seeing numbers, right,
23 looking at numbers of events?

24 MR. KRATKA: Objection. Mischaracterizes his
05:23:37 25 testimony.

Bowers - Cross/Nichols

1 THE COURT: Overruled.

2 THE WITNESS: I based that opinion on looking at the
3 voluminous records, the vast numbers of events and the types of
4 events documented in the STEERS reports and the files associated
05:23:50 5 therewith.

6 BY MR. NICHOLS:

7 Q Yes, sir. And so, you based your conclusion that you put
8 in that report based on an interview of STEERS reports, correct?

9 MR. KRATKA: Objection. Misstates the answers --

05:24:05 10 misstates the facts.

11 THE COURT: Overruled. If he disagrees, I'll allow
12 him to do it.

13 A I looked at a lot more than just the STEERS reports. I
14 looked at the files, complete files, for each event.

05:24:15 15 BY MR. NICHOLS:

16 Q I hate to go back on you, Mr. Bowers.

17 Do you recall that we looked at Defendants'
18 Exhibit 524 earlier? Do you remember looking at this record of
19 your --

05:24:26 20 A Yes.

21 Q -- the work that you did?

22 And remember how we very carefully went through
23 this record and indicated that the things that you did before
24 you produced your report was review STEERS Reports and also
05:24:41 25 visit the ExxonMobil Baytown Complex, correct?

Bowers - Cross/Nichols

1 **A** Yes. And I would remind Counsel that this was prepared for
2 billing of documents -- billing document for NELC.

3 **Q** Yes, sir.

4 **A** Not as testimony.

05:24:55 5 **Q** Yes, sir. But the point is, Mr. Bowers, you received data
6 and information over time in this case, correct?

7 **A** Oh, yes.

8 **Q** And so you're not suggesting to the Court that you reviewed
9 20,000 or 40,000 pages of documents before you issued your
05:25:19 10 March 15th, 2012, report, are you?

11 **A** I am not. We have just received some in the last month.

12 **Q** So just --

13 **A** Just received some in the last six months.

14 **Q** Give the Court the estimate of the number of the percentage
05:25:34 15 of that volume of documents that you had reviewed as of the time
16 that you produced a report in which you said, among other
17 things, "Exxon management has not put a priority on preventing
18 upset events and unauthorized air emissions."

19 THE COURT: That was the 2012 report?

05:25:54 20 MR. NICHOLS: Yes, sir.

21 THE COURT: Of the witness?

22 MR. NICHOLS: Yes, sir.

23 THE COURT: Okay.

24 THE WITNESS: It's several thousand pages; but more
05:26:05 25 than that, I really can't --

Bowers - Cross/Nichols

1 BY MR. NICHOLS:

2 **Q** And then you said -- and then I asked you if it was based
3 on the numbers. Let's keep going.

4 "Based on the numerous" -- right, that's your
05:26:14 5 word -- "and unending litany of emission events and reinforced
6 by the physical appearance of the plant, it appears that Exxon's
7 approach to running the Baytown Complex has become one of 'run
8 it till it breaks' and minimizing preemptive maintenance."

9 Is that what you said in that March 15, 2012,
05:26:38 10 report?

11 **A** Yes. And that's my opinion based on the facts.

12 **Q** Okay. And you made that based on what you had reviewed as
13 of March 15, 2012, right? Now --

14 **A** And it also included a visit to the plant, of course.

05:26:48 15 **Q** Yes, sir. And we're going to talk about that next.

16 So when you went to the plant, Mr. Bowers, you
17 went to various locations within the plant, correct?

18 **A** Yes.

19 **Q** You went to the safety orientation area in the visitor's
05:27:05 20 center, correct?

21 **A** Yes.

22 **Q** Went through a safety organization -- safety orientation at
23 that location, correct?

24 **A** Yes.

05:27:12 25 **Q** You first went out to locations in the refinery, correct?

Bowers - Cross/Nichols

1 **A** I believe that's correct, yes, sir.

2 **Q** And you mentioned earlier to Mr. Kratka that you went to
3 the flexicoker unit.

4 **A** Yes.

05:27:31 5 **Q** At the refinery?

6 **A** Yes.

7 **Q** Mr. Bowers, isn't it true that when you went out on the
8 grounds of the Baytown refinery at the flexicoker unit, upon
9 entering that unit you made the comment that the area "smells
10 good"?

05:27:56

11 **A** I did. That was a true statement --

12 **Q** And that --

13 **A** -- at that time.

14 **Q** And that was meant as a compliment, correct?

05:28:08 15 **A** It was meant as an observation.

16 **Q** Yes, sir. Because smelling good to a guy who works -- has
17 worked at a refinery --

18 **A** You're presuming to know what I meant?

19 **Q** I'll ask you to explain to the Court exactly what you did
20 mean when you told the people on the ground at that facility
21 that it smelled good.

05:28:25

22 MR. KRATKA: Objection. Asked and answered.

23 THE COURT: Overruled.

24 MR. KRATKA: Are you asking -- restate -- ask your
25 question that you want an answer to, please.

05:28:40

Bowers - Cross/Nichols

1 BY MR. NICHOLS:

2 **Q** Tell the Court when you were out walking the refinery and
3 when you made the observation face-to-face to the people out
4 there as opposed to what's written in some report that the
5 refinery smelled good, what were you talking about?

05:28:52

6 **A** The comment was meant to import that there was no odor of
7 mercaptan or hydrogen sulfide, both of which are difficult to
8 contain and easy to detect by nose.

9 **Q** When you're out at the flexicoker unit, Mr. Bowers, isn't
10 it true that when you pointed to the side of a boiler that you
11 said -- told the folks there on the ground that that -- that the
12 boiler showed signs of weld repair and "That's good. It shows
13 it's getting looked at and inspected"?

05:29:19

14 Correct?

15 **A** That is correct.

05:29:37

16 **Q** You went out to the flare stack, Flare Stack 25, and
17 analyzer house, correct?

18 **A** Correct.

19 **Q** And at the flexicoker unit flare stack, you told the folks
20 on that tour that this was "A very nice analyzer shack."

05:30:00

21 Correct?

22 **A** Correct.

23 **Q** And that "ExxonMobil has good standards?"

24 Correct?

25 **A** I don't recall that.

05:30:12

Bowers - Cross/Nichols

1 Q Okay.

2 A I do recall asking the question of the lag time between
3 sample point and analysis and I never received an answer.

4 Q You went to the maintenance shop at the refinery, correct?

05:30:33 5 A It was called a maintenance shop. It certainly was not the
6 maintenance shop. It was a small area, nothing going on.

7 Q And at the maintenance shop, you learned that a number of
8 the -- a certain number of the -- a certain amount of the
9 equipment is sent out to third-party facilities for repair,

05:30:53 10 correct?

11 A Yes.

12 Q And you made the comment that "lots of outside shops in
13 Houston do excellent work."

14 Correct?

05:30:59 15 MR. KRATKA: Your Honor, if --

16 THE COURT: Yes, sir.

17 MR. KRATKA: If Mr. Nichols is taking stray comments
18 out of context, if there's a document that contains all of your
19 records of Mr. Bowers' comments, statements, I think we're
05:31:12 20 entitled to see it. Or the witness should be able to see it to
21 be able to put it in context.

22 MR. NICHOLS: I am asking him if he made these
23 statements, Judge. It's cross examination.

24 THE COURT: Overrule the objection. Overruled.

05:31:22 25 //

Bowers - Cross/Nichols

1 BY MR. NICHOLS:

2 **Q** Do you recall making that statement?

3 **A** Yes. It's a factual statement.

4 **Q** And just to clean up one thing a little bit, you were

05:31:33 5 asked -- you were talking about the age of the facility at the
6 refinery and the refinery operations date back to when? When
7 was that refinery -- any portion of the refinery first built?

8 **A** I didn't provide that information --

9 **Q** Okay. So you did --

05:31:47 10 **A** -- I think his Honor did.

11 **Q** Okay. So do you know when the refinery was first built?

12 **A** Only from what his Honor stated.

13 **Q** Okay. Did you try to find out? I mean, you made some
14 comments about the age of the facility, correct? As part of
05:32:06 15 your analysis, right?

16 **A** General comments but not specifying the age.

17 **Q** So --

18 **A** The -- if I will take the Judge at his word, which, I
19 believe, was 1909; and that's consistent with my knowledge of
05:32:18 20 the oil industry at that period.

21 **Q** So -- but you made comments about certain of the facilities
22 being old, correct?

23 **A** Oh, yes.

24 **Q** So did you make any effort to figure out when it was that
05:32:28 25 these facilities were first installed?

Bowers - Cross/Nichols

1 **A** Only for certain things.

2 **Q** Now, just to make sure that we're all clear, you're not
3 suggesting that all of the equipment that operates in the
4 refinery is all the original equipment, that is, that everything
05:32:43 5 that's running out there is the stuff that was installed from
6 day one, correct?

7 **A** I made no such comment or assertion.

8 **Q** You know that there are parts of that refinery facility
9 that were installed as recently as 2010, correct?

05:32:58 10 **A** I didn't see any, but I'll take your word for it.

11 **Q** And that's what you would expect. There are a number of
12 petrochemical facilities that have been in operation a long
13 time. But what happens is that equipment gets replaced,
14 correct?

05:33:15 15 **A** That's the normal pattern. But, strikingly, I don't find
16 that in your capital investment plans.

17 **Q** So you don't know whether ExxonMobil has installed
18 additional equipment or new equipment out at the refinery since
19 it first started?

05:33:31 20 MR. KRATKA: Objection. Misstatement.

21 THE COURT: Sustained.

22 BY MR. NICHOLS:

23 **Q** Do you know what equipment has been installed by ExxonMobil
24 at the refinery since that refinery first went into operation?

05:33:42 25 **A** No, I do not have that information at hand. I would be

Bowers - Cross/Nichols

1 happy to review Exxon's capital investment.

2 **Q** Continuing with your site tour, do you recall, Mr. Bowers,
3 that you also did a tour of the chemical plant, correct?

4 **A** That's not true.

05:34:14 5 **Q** You were in a van. I believe I was in the van with you and
6 we drove --

7 **A** Past it.

8 **Q** -- past a chemical plant, correct?

9 **A** Yes, sir.

05:34:24 10 **Q** And in fact, there were certain photographs that were taken
11 during that tour, correct?

12 **A** I'd have to refer to the photographs because it was --

13 THE COURT: Well, there were photographs --

14 THE WITNESS: Yeah.

05:34:35 15 THE COURT: -- taken during the tour because we saw
16 some of them.

17 THE WITNESS: Yes. And in this case --

18 THE COURT: But I thought you said it was an Exxon
19 photographer and you asked for certain photos.

05:34:45 20 THE WITNESS: That is -- I asked their attorney,
21 right, to ask for photos.

22 BY MR. NICHOLS:

23 **Q** And there were photographs taken?

24 **A** Yes. I believe we looked at the loop reactor for the
05:34:53 25 polypropylene. I think those were the plants -- one of those

Bowers - Cross/Nichols

1 was Plant Number 8 which was very -- the yo-yo unit.

2 **Q** And did you make the comment as we were all driving by the
3 polypropylene unit that, quote, "I don't recall any events from
4 polypropylene."

05:35:08

5 Correct?

6 **A** I said that statement. Later found it to be totally
7 inaccurate.

8 **Q** And then you also said that, quote, "ExxonMobil does a
9 great job at polypropylene manufacturing, better than anyone
10 else."

05:35:20

11 Right?

12 **A** I don't recall that statement at all and I don't think it's
13 true. They are one of the leaders.

14 **Q** Do you recall that in the van during the tour, Mr. Bowers,
15 that you pointed out an olefins plant flare in the distance and
16 said "Industry has a furnace run time of 'X' but ExxonMobil has
17 a run time of 2X and everyone is trying to figure out why"?

05:35:38

18 **A** Your point?

19 **Q** Did you say that?

05:35:58

20 **A** Yes. It is a known fact.

21 **Q** Did you say in the van during the tour, quote, "ExxonMobil
22 invented the cat cracker"?

23 **A** I think I said they were one of the inventors. The three
24 other companies developed it at a simultaneous time.

05:36:25

25 **Q** And finally, Mr. Bowers, during a close-out meeting from

Bowers - Cross/Nichols

1 the tour, did you tell folks assembled there that the, quote,
2 "housekeeping was excellent," close quote, at the complex?

3 MR. KRATKA: Objection, Judge.

4 THE COURT: What?

05:36:43 5 MR. KRATKA: Objection. Relevance.

6 THE COURT: Overruled.

7 THE WITNESS: I made that statement and then I added
8 the comment behind it, "Of course, we had a torrential rain
9 three days ago to clean everything up."

05:36:56 10 BY MR. NICHOLS:

11 Q And did you say that the housekeeping was, quote, "very
12 commendable," close quote?

13 A I did.

14 Q Okay. Now with respect to some of the other things you
05:37:05 15 talked about today, you talked to the Court about corrosion
16 under insulation, correct?

17 A I mentioned it, yes.

18 Q Okay. Mr. Bowers, do you know how it is that facilities
19 under API standards inspect pipe that is under corrosion -- I'm
05:37:30 20 sorry, that is -- Mr. Bowers, do you understand how it is that
21 petrochemical facilities and refineries inspect pipe that is
22 under insulation?

23 A I can't answer that question yes or no because it depends
24 on the facility and the installation and the type of service.

05:37:55 25 Q Is the only way to inspect pipe that is under insulation

Bowers - Cross/Nichols

1 stripping away all the insulation and checking every portion of
2 that pipe?

3 **A** No. It's the only foolproof way.

4 **Q** How do the men and women at ExxonMobil inspect pipe under
05:38:16 5 insulation? What protocol do they use? What procedure do they
6 use? How many people are doing it?

7 MR. KRATKA: Objection. Multiple questions.

8 THE COURT: Sustained.

9 BY MR. NICHOLS:

05:38:28 10 **Q** Let's start with one: What's the protocol at the
11 ExxonMobil Baytown Complex for inspecting pipe that is under
12 insulation?

13 **A** I do not know.

14 **Q** How many people at the ExxonMobil Baytown Complex are
05:38:42 15 involved in inspecting pipe under insulation?

16 **A** I don't know.

17 **Q** What types of tools are used by the people at the
18 ExxonMobil Baytown Complex, men and women, to inspect pipe under
19 insulation?

05:38:58 20 **A** Again, I do not have that knowledge.

21 **Q** Now, another thing you talked about with the Court was rust
22 on the surface of metal. Do you recall that?

23 **A** Yes.

24 **Q** And I believe you said in your report somewhere that visual
05:39:16 25 appearance of equipment is not necessarily an indicator of its

Bowers - Cross/Nichols

1 condition; is that correct?

2 **A** That's a true statement.

3 **Q** Okay. And so that -- to give it to an analogy that I can
4 understand: There is a bridge that my family and I cross out in
05:39:41 5 West Austin almost every day that has rust on the structural
6 steel of the bridge. Have you seen bridges like that?

7 **A** I'm not a qualified bridge inspector, sir.

8 **Q** Have you ever seen a bridge with rust on it?

9 **A** Well, yes. The bridge over the Mississippi River in
05:40:00 10 Morgan City.

11 **Q** And would you agree with me, Mr. Bowers, that rust on the
12 surface of equipment that is out in the field is not necessarily
13 an indication of it being deficient?

14 **A** I believe I stated that, as a general matter, it depends on
05:40:25 15 the details.

16 **Q** Now, Mr. Bowers, I'm going to ask you about, in connection
17 with corrosion and pipes and pipe inspection, are there
18 standards that are put out in the industry for the inspection
19 and selection of material for piping in refineries and
05:40:57 20 petrochemical installations?

21 **A** That's a multiple question, sir. Would you please break it
22 up.

23 **Q** Is there an organization that produces standards for
24 inspection of metal piping and metal vessels in industrial
05:41:16 25 facilities in the United States of America?

Bowers - Cross/Nichols

1 **A** That, again, is a multiple question, sir. Would you please
2 -- piping and vessels are different.

3 **Q** Is there an organization in the United States of America
4 that produces standards on material selection and inspection of
5 vessels at industrial facilities?

05:41:38

6 **A** That, again, is two separate areas.

7 THE COURT: All right. Answer -- pick one and answer
8 it.

9 THE WITNESS: The American Petroleum Institute

05:41:50

10 Publishes recommendations. They do not --

11 THE COURT: API?

12 THE WITNESS: API. They do not carry the force of a
13 standard. There is no agency that publishes a standard to which
14 the refinery or chemical plant must conform.

05:42:04

15 BY MR. NICHOLS:

16 **Q** Okay.

17 **A** The American Society of Mechanical Engineers publishes
18 recommendations on which material is suitable for which service.

19 **Q** Okay. So the API sets out what you would consider to be
20 recommendations on best practices with respect to the inspection
21 of vessels at an industrial facility, correct?

05:42:22

22 **A** No, sir.

23 **Q** Okay. You're going to agree that API puts out
24 recommendations with respect to inspection of vessels and
25 industrial facilities?

05:42:41

Bowers - Cross/Nichols

1 **A** No, sir. API puts out recommendations for length of
2 probable inspection for piping and only some vessels and some
3 tanks.

05:43:03

4 **Q** Okay. And so API publishes those standards -- I'm sorry,
5 publishes those recommendations, correct?

6 **A** Yes.

7 **Q** And industrial facilities around the United States look to
8 those recommendations, correct?

9 **A** They consider them to be a starting point only.

05:43:19

10 **Q** Have you looked at those standards -- I'm sorry, looked at
11 those recommendations before?

12 **A** I have.

05:43:53

13 **Q** Mr. Bowers, I want to make sure that the Court has a
14 complete list of the types of categorizations of events that
15 you've produced in the case.

16 MR. NICHOLS: Can we put up the slide, please.

17 THE COURT: Hang on just a second.

18 BY MR. NICHOLS:

05:44:16

19 **Q** Mr. Bowers, what we've done is we put up a list on the
20 board and I want you to confirm for me, using your report if you
21 need to, that these are various lists -- the titles of various
22 lists of so-called common causes that you have produced to the
23 Court in this case.

24 **A** Yes, sir.

05:44:31

25 MR. KRATKA: Objection. This is a list from his

Bowers - Cross/Nichols

1 initial report that we explained --

2 THE COURT: I understand that.

3 Is there one -- Mr. Nichols, is that in the
4 current report?

05:44:41 5 MR. NICHOLS: Well, that's what I want to figure out
6 for the Court because I want the Court to know exactly what this
7 man is saying in terms of what he considers to be common causes.

8 THE COURT: Well, I'm not looking at that. Your point
9 is that he said this at one time and then changed it in his
05:44:56 10 supplemental report.

11 MR. NICHOLS: That's part of it.

12 THE COURT: Okay. Is that in the supplemental report
13 or the -- the amend -- I guess we were talking. Hang on a
14 second. What do you call the one that he filed, the last one --
05:45:06 15 what's the last?

16 MR. KRATKA: Exhibit 430.

17 THE COURT: It's what?

18 MR. KRATKA: Exhibit 430.

19 THE COURT: And what do they call that?

05:45:13 20 MR. KRATKA: The revised supplemental report.

21 THE COURT: Revised supplemental report. Okay. Now,
22 what is the purpose for going to the first report? What are
23 you -- I think I know where you're going.

24 MR. NICHOLS: Yes, sir.

05:45:25 25 THE COURT: You're talking -- and again, I'm not

Bowers - Cross/Nichols

1 putting words in your mouth, but I just want to -- the purpose
2 is to show what he said originally and then he changed it.

3 MR. NICHOLS: Yes, sir. That's one purpose.

4 THE COURT: What's the other purpose?

05:45:36

5 MR. NICHOLS: The other purpose is to make sure the
6 Court understands exactly what he is currently relying on as his
7 group of common causes.

05:45:51

8 THE COURT: Well, I don't follow that second point. I
9 see your first point, in effect, that, for whatever weight is
10 given, that it was in one report and not in the next.

11 MR. NICHOLS: Yes.

12 THE COURT: But what was that second point?

05:46:00

13 MR. NICHOLS: The second point is that I want to make
14 sure that we got a list -- a precise list of what this man is
15 saying he's presenting to the Court as being a list of common
16 causes.

05:46:13

17 THE COURT: All right. Hang on one second. It's the
18 supplemental because we know in federal -- in pleadings, state
19 and federal, okay, supplemental means adds on to it, amended.
20 First amended complaint supersedes the first. This is
21 supplemental.

22 So you're saying the last report is 2013, that's
23 supplemental to the first one?

24 MR. KRATKA: Yes. The --

05:46:24

25 THE COURT: Yes. Is that correct?

Bowers - Cross/Nichols

1 MR. KRATKA: It's partly correct. The text of each
2 report in written form explains his opinions and his
3 methodologies.

4 THE COURT: Which one? Which report?

05:46:38 5 MR. KRATKA: Both. The supplemental report was an
6 add-on to the first.

7 THE COURT: Okay. But this is still viable.

8 MR. KRATKA: But those -- but the attachments where he
9 has lists of events, he did not have the ability to categorize
05:46:53 10 the recordable events, for example, the -- back when he was --

11 THE COURT: No. I'm talking about, basically,
12 supplemental is in addition to the first report.

13 MR. KRATKA: For the -- in terms of these lists and
14 tables and causes, the supplemental report superseded the
05:47:05 15 original list. It's revised and updated and that is --

16 THE COURT: So he has a list in the supplemental like
17 this but has different elements?

18 MR. KRATKA: Minor. But it's -- and we went through
19 them, your Honor.

05:47:15 20 THE COURT: I understand.

21 MR. NICHOLS: So I think I can clear it up real quick,
22 Your Honor. I'm looking at --

23 THE COURT: What I would like to know is what -- you
24 know, you're showing one that Mr. Kratka said, as far as the
05:47:26 25 list goes, it was updated and changed. Okay?

Bowers - Cross/Nichols

1 MR. NICHOLS: The underlying lists were changed, your
2 Honor, but the nature of the charts did not change. In other
3 words --

05:47:38

4 THE COURT: All right. Then go ahead. Yes, sir. Go
5 right ahead.

6 MR. NICHOLS: Yes, sir.

7 BY MR. NICHOLS:

8 Q So what I want you to do, Mr. Bowers, is to look at your
9 report --

05:47:52

10 THE COURT: Which one?

11 MR. NICHOLS: 430.

12 BY MR. NICHOLS:

13 Q -- and, first of all, Exhibit 430 is entitled "Revised
14 Supplemental Opinion of Keith Bowers," correct?

05:48:02

15 A Yes.

16 Q So if we look at that and we look at the second page --

17 THE COURT: And that's the January, 2013, correct?

18 MR. NICHOLS: Yes, sir.

19 THE COURT: Okay.

05:48:10

20 BY MR. NICHOLS:

21 Q So on the second page, you have a list of what you say are
22 corrections made to the tables attached to your supplemental
23 opinion from earlier.

24 THE COURT: Where? I'm looking at what page?

05:48:24

25 MR. NICHOLS: It's on page -- the first page.

Bowers - Cross/Nichols

1 THE COURT: What numerical page at the bottom?

2 MR. NICHOLS: It doesn't have one. It's like an intro
3 page.

05:48:32

4 THE COURT: Okay. I am looking at it. Now, what
5 am -- what am I looking at? Which paragraph?

6 BY MR. NICHOLS:

7 Q So you're looking at the third paragraph and you see,
8 Mr. Bowers, that you have listed there a table regarding leaks,
9 correct?

05:48:42

10 THE COURT: Where? I don't see it. Show it to me on
11 what you're looking at.

12 MR. NICHOLS: Yes, sir.

13 THE COURT: That's the third paragraph?

14 MR. NICHOLS: Yes, sir.

05:48:55

15 THE COURT: Where it says Exhibit 7?

16 MR. NICHOLS: Yes, sir.

17 THE COURT: All right. Got it. I'm looking at it.
18 Now, what are we looking at?

19 BY MR. NICHOLS:

05:49:04

20 Q It's Exhibit 7 regarding emission events caused by leaks,
21 correct?

22 THE COURT: Got it.

23 THE WITNESS: Yes.

24 BY MR. NICHOLS:

05:49:06

25 Q We got leaks up on our chart, right?

Bowers - Cross/Nichols

1 **A** Yes.

2 **Q** Exhibit 8, emission events involving compressors. We got
3 compressors on our chart, correct?

4 **A** Yes.

05:49:16 5 **Q** Emission events involving fires. We got fires on our
6 chart, correct?

7 **A** Yes.

8 **Q** Exhibit 10, mechanical failures, correct?

9 **A** Yes.

05:49:24 10 **Q** We got mechanical failures on our chart.

11 11, instrument failures. We got those on our
12 chart, correct?

13 **A** Yes.

14 **Q** Exhibit 12, tanks. We got those on our chart as well,
05:49:37 15 correct?

16 **A** Yes.

17 **Q** Plugged lines. We got those on our chart as well?

18 **A** Yes.

19 THE COURT: Where's plugged line -- I see it. Okay.

05:49:47 20 BY MR. NICHOLS:

21 **Q** Power supply failures. We got those on our chart?

22 **A** Yes.

23 **Q** Cold weather events?

24 **A** Yes.

05:49:54 25 THE COURT: I don't see it.

Bowers - Cross/Nichols

1 MR. NICHOLS: I don't see cold weather events on our
2 chart.

3 THE COURT: All right, go on. The largest pollutant
4 release.

05:50:04

5 BY MR. NICHOLS:

6 Q So, in your initial report, Mr. Bowers, you also had a
7 category called "Lightning Strikes," correct?

8 Do you remember doing that?

9 A That's been so long ago, I'd have to refer to the report.

05:50:19

10 Q Yes, sir. And I've got it in front of you, if you want to
11 look at that. We're looking at Exhibit 526.

12 A I believe there were some instances caused by lightning
13 strikes.

14 Q Right. And my point is: Are you no longer including those
15 as a common cause chart?

05:50:35

16 A Correct.

17 Q So, we can strike that one off the list. You had one that
18 was listed "Startup, Shutdown, and Maintenance."

19 Is that a chart that, likewise, you're not
20 including as a common cause?

05:50:52

21 A Correct.

22 Q So, we can strike that one off the list. You had one
23 called "Safety Valve Problems," correct?

24 A Yes.

05:51:00

25 Q And you're striking that one off the list, as well?

Bowers - Cross/Nichols

1 **A** Yes.

2 MR. KRATKA: Objection. I think we went over in
3 testimony that safety valves were included in the updated
4 mechanical failures.

05:51:10 5 BY MR. NICHOLS:

6 **Q** Okay. So what you're telling the Court is that, initially,
7 you had a chart that broke out safety valves but now you've
8 lumped that into mechanical failures?

9 MR. KRATKA: Again, objection. Misstates the
05:51:23 10 testimony.

11 THE COURT: Overruled. What is the deal then? Ask
12 the witness.

13 BY MR. NICHOLS:

14 **Q** Sure. What's the deal? What happened to the safety valve
05:51:29 15 issues that you pointed out in your initial report? Are they
16 still in one of these tables or not?

17 **A** They are.

18 **Q** Where are they lumped together?

19 **A** Mechanical.

05:51:32 20 **Q** So, basically --

21 **A** Some may be in leaks, as well, depending on --

22 THE COURT: So, it's still in -- still in the
23 ballpark, right?

24 THE WITNESS: Yes, sir.

05:51:38 25 THE COURT: Okay.

Bowers - Cross/Nichols

1 BY MR. NICHOLS:

2 **Q** Okay. And then with respect to oxygen supply failures, did
3 you have a chart on that initially?

4 **A** Initially, yes.

05:51:47 5 **Q** And did you drop that one, as well?

6 **A** We did.

7 **Q** Okay. Steam supply failures?

8 **A** We initially had that and it has been dropped.

9 **Q** Okay. So we've dropped -- we've put safety valves into
05:52:02 10 other categories.

11 **A** Yes.

12 **Q** We dropped startup, shutdown, and maintenance. We dropped
13 lightning strikes. We dropped power supply failures?

14 **A** No, it's there. I think lightning is included in power
05:52:14 15 supply failures.

16 **Q** Okay. So, instead of referring these specifically as
17 lightning strikes, you just put them in the category of power
18 supply failure?

19 **A** Yeah, power failure.

05:52:24 20 **Q** Okay. So in other words, power supply failures, when the
21 Court looks at it, that will include power supply failures that
22 were caused by lightning, as well as other different types of
23 causes?

24 **A** I think there were a couple of failures caused by
05:52:34 25 lightning. There was one case where a component failed sometime

Bowers - Cross/Nichols

1 after the lightning strike. So is it caused by lightning or
2 caused by a failure?

3 **Q** You don't know?

4 **A** I don't know. It's one or the other. Did lightning
05:52:50 5 contribute to the power supply -- the failure of that
6 electrical?

7 **Q** But my question to you now is with the reorganization of
8 these charts, you now have a chart that's entitled "Power Supply
9 Failures" that includes some events that were caused by
05:53:04 10 lightning as well as other power supply failures that were
11 caused by, for example, a shutdown of a power grid, correct?

12 **A** Yes.

13 **Q** Okay. Tank failures, do you still have one of those?

14 **A** I'll have to look. I think you -- you had a limited number
05:53:14 15 of tank failures.

16 **Q** So, are you still relying on tank failures as being a
17 common cause?

18 MR. KRATKA: Go back to the list. It's right on
19 there. You just went over it a minute ago.

05:53:35 20 THE WITNESS: Yes

21 BY MR. NICHOLS:

22 **Q** Okay.

23 **A** Exhibit 12.

24 **Q** We talked about boiler failures, correct?

05:53:36 25 **A** Yes.

Bowers - Cross/Nichols

1 Q That's on the list?

2 A Yes.

3 Q Fires is on the list, right?

4 A Yes.

05:53:41 5 Q Electrical failures, is that on the list?

6 MR. KRATKA: Objection. Asked and answered.

7 THE COURT: Overruled.

8 BY MR. NICHOLS:

9 Q Plugged lines, is that on the list still?

05:53:54 10 MR. KRATKA: Objection. Asked and answered.

11 THE COURT: Overruled.

12 THE WITNESS: Yes. It's Exhibit 13.

13 BY MR. NICHOLS:

14 A Instrument failures on the list?

05:53:56 15 Leaks on the list?

16 Mechanical failures on the list?

17 Regenerators on the list, correct?

18 A No.

19 Q No? Regenerators are off the list now?

05:54:05 20 A They're included in mechanical failure or leaks or whatever
21 is appropriate.

22 Q So what you --

23 A It's not a common piece of equipment.

24 Q Sure. What you initially broke out among three different

05:54:16 25 things for your own report, you consolidated under this label

Bowers - Cross/Nichols

1 "Mechanical Failures," correct?

2 **A** Yes.

3 **Q** Okay. And then compressors, we still have a list of those
4 for you, right?

05:54:27 5 **A** Yes.

6 **Q** Mr. Bowers, I want to talk to you for a minute about your
7 opinions on maintenance spending and capital expenditures. I
8 believe you told the Court earlier that the way that you derived
9 at the amount of additional maintenance expenditure that you
10 thought was appropriate is that you did what you used to do as a
11 project engineer and calculated the number of people that would
12 be involved and the amount of equipment that would be involved
13 and material and came up with a budget, correct?

14 **A** Yes.

05:55:21 15 **Q** Let's look. Do you still have your March 15, 2012, report
16 in front of you?

17 **A** Excuse me while I get some water. My throat is quite
18 irritated.

19 (Discussion off the record.)

05:55:49 20 THE COURT: You got about ten more minutes.

21 MR. NICHOLS: Yes, sir. I'll be done within ten
22 minutes.

23 THE COURT: That's all right. No. When you reach a
24 stopping point, let me know.

05:56:00 25 MR. NICHOLS: No. I will be done in ten minutes,

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1 within ten minutes.

2 THE WITNESS: If there's a question, will you please
3 repeat it.

4 BY MR. NICHOLS:

05:56:12 5 Q Yes, sir.

6 So what you told the Court just a little earlier
7 ago today is that to come up with this \$90 million figure that
8 you told the Court about is that you came up with a budget for a
9 number of personnel and material that would be required to put
05:56:27 10 some additional people out in the field to inspect for leaks,
11 correct?

12 A Yes. I used my best judgment.

13 Q Okay. So Mr. Bowers, it's actually true -- well, let me
14 ask you this question: Have you produced a budget of the type
05:56:45 15 that you would have produced back when you were project manager?

16 Have you generated a budget like the one that you
17 would have given to those banks that loaned the money on that
18 project you were telling the Court about earlier to come up with
19 that 90 million?

05:57:03 20 A Are you referring to did I do it for this case?

21 Q Yes, sir.

22 A Oh, no, sir. The ones for the banks would be much more
23 detailed.

24 THE COURT: How many people do you say was necessary
05:57:12 25 for that 90 million?

Bowers - Cross/Nichols

1 THE WITNESS: It's -- it's approximately 900 people.

2 THE COURT: About 900. All right.

3 THE WITNESS: Yes.

4 BY MR. NICHOLS:

05:57:18 5 Q So what you're telling the Court is you arrived at the \$90
6 million figure by looking from the bottom up at 900 people, as
7 well as additional material expenditure, correct?

8 A Correct.

9 Q Okay. Let's actually look at your report from March 15th,
05:57:34 10 2006, and you should still have that in front of you. That's
11 the -- you got it in two places. And I'll give it to you.

12 I'll give you back Defendants' Exhibit 526. And
13 I'll ask you to look at Page 18.

14 MR. NICHOLS: Your Honor, could I have the overhead?
05:58:31 15 I think it would be faster if I just did that.

16 BY MR. NICHOLS:

17 Q This is the -- you calculated that 90 million as part of
18 your initial report, correct?

19 A Yes, sir.

05:58:40 20 Q And so here's where you say that Exxon should be devoting
21 540 million per year towards maintenance-related activities and
22 materials. And that's the three percent of the 18 billion you
23 talked to the Court about, correct?

24 A Correct.

05:58:56 25 Q Now, you put out this number, the 540 million per year --

Bowers - Cross/Nichols

1 **A** Excuse me, sir.

2 **Q** Yes, sir.

3 **A** Would you rephrase what you just said. I think it was
4 inaccurate.

05:59:04 5 **Q** In your report from March 15th of 2012, you put in that
6 Exxon should be devoting roughly \$540 million per year towards
7 maintenance-related activities and materials, correct?

8 **A** That is correct.

9 **Q** And that figure you derived, in the way you described for
05:59:24 10 the Court earlier, as being three percent of 18 billion or the
11 current value of the plant, right?

12 **A** Yes.

13 **Q** So what you said is, using your best engineering judgment,
14 without even knowing how much ExxonMobil was actually spending
05:59:42 15 on maintenance, based on your best engineering judgment, that
16 ExxonMobil should be spending roughly 540 million a year on
17 maintenance, correct?

18 **A** Correct.

19 **Q** After you wrote this number down, you found out how much
06:00:03 20 ExxonMobil was spending on maintenance per year, correct?

21 **A** Yes.

22 **Q** And it turns out, Mr. Bowers, that ExxonMobil was paying as
23 much or more in maintenance-related activities and materials
24 than the \$540 million per year figure that you put in your
06:00:24 25 report, correct?

Bowers - Cross/Nichols

1 **A** Yes. If you also notice, I made a qualification there
2 that's very important.

3 **Q** Yes, sir. And we're going to talk about that because it
4 relates to the second part.

06:00:39 5 What you just told the Court earlier today is,
6 "Hey, I made a bottom-up estimate of additional capital
7 expenditure that needs to be made. I looked at 900 people. I
8 looked at materials to be required and I came up with that
9 figure."

06:00:58 10 And now that you've read your report, you know
11 that's not accurate. That's not the way that you calculated
12 that figure, correct?

13 MR. KRATKA: Objection. Misstates the testimony.

14 THE COURT: Overruled.

06:01:07 15 BY MR. NICHOLS:

16 **Q** That is not the way, Mr. Bowers -- what you told the Court
17 earlier in terms of looking at 900 people and materials is not
18 the way you came up with that \$90 million, correct?

19 **A** The two intersect.

06:01:19 20 **Q** Sir, look at your report.

21 **A** Yes. I see what you're saying, sir.

22 **Q** You see -- you understand what I'm saying.

23 **A** I understand what you're saying.

24 **Q** You calculated the 90 million not based on 900 people out
06:01:29 25 there looking for pipe, you calculated based on an additional --

Bowers - Cross/Nichols

1 **A** Half a percent.

2 **Q** -- you think half a percent deficiency of replacement cost,
3 right?

4 **A** Yes.

06:01:49 5 **Q** And your -- the way you calculated that number is that,
6 basically, based on your review of the STEERS reports and data
7 and the day that you spent out at the Baytown refinery, that
8 based on that, you made the judgment -- your own judgment that,
9 whatever they're spending, it's got to be .5 percent less than
06:02:14 10 -- of the replacement cost than what they should be spending,
11 right?

12 **A** At least.

13 **Q** Mr. Bowers, it is your position in this lawsuit that --
14 with respect to each and every one of the roughly 4,000 emission
06:02:51 15 events that you say you've looked at that each and every one of
16 those emission events could have been prevented, correct?

17 **A** Do you want a theoretical answer or a practical answer?

18 **Q** I think we're dealing in the practical world. So, why
19 don't you give me a practical answer first?

06:03:17 20 **A** In my opinion, based on my review of the evidence, Exxon is
21 not prepared to eliminate all of those events.

22 **Q** That is not my question, Mr. Bowers.

23 **A** As they operate, they cannot achieve zero events.

24 **Q** I -- my question to you was you told the Court earlier
06:03:33 25 every emissions event at ExxonMobil could have been prevented,

Bowers - Cross/Nichols

1 correct?

2 **A** Correct.

3 **Q** And you -- that is your opinion. Sitting here today, you
4 are staking your professional judgment on that statement,
5 correct?

06:03:45

6 **A** Yes.

7 **Q** And at the same time, you've told the Court -- and I
8 believe I'm getting this right -- that all refineries have
9 emissions events, even ones that you worked at, correct?

06:04:17

10 **A** Correct.

11 **Q** And finally -- I hope I'm not running over the Court's time
12 limit. This is my last subject and I'll wrap it up.

13 You showed the Court some trend lines, early on
14 in your testimony, as far as the number of recordable events and
15 the number of reportable events and the emissions, correct?

06:04:31

16 **A** Yes.

17 **Q** Have you reviewed the trend charts that ExxonMobil has put
18 into evidence in this case as Defendants' Exhibit 2003?

19 **A** I have not. I just saw them yesterday for the first time.

06:04:51

20 **Q** Well, let me just ask you, in general, Mr. Bowers, did you
21 put together those trend line charts yourself?

22 **A** They were put together for me under my instructions.

23 **Q** Yes, sir. And did your instructions include, "Look at the
24 publicly available data concerning reportable events"?

06:05:09

25 **A** Yes. That's what we have. Plus we also have recordable

Bowers - Cross/Nichols

1 events that are not publicly available but were disclosed to us
2 by Exxon recently.

3 **Q** Yes, sir. So in other words, when you're trying to show a
4 trend line of the trend for the number of reportable events, you
06:05:29 5 would rely on the publicly available STEERS data, correct?

6 **A** If one limits it to reportable events, that's all we have.

7 **Q** You have a trend line --

8 **A** Yes.

9 **Q** -- that deals with that, correct?

06:05:41 10 You showed the Court earlier -- this is one of
11 your charts, right? Company -- "Complex-Wide Annual Number of
12 Emission Events," the red line?

13 **A** Yes.

14 **Q** Right?

06:05:53 15 **A** Right.

16 **Q** And would you agree with me that that trend line shows a
17 decrease over time in the number of reportable emission events
18 at the Baytown Complex?

19 **A** I believe I so stated at the time. It's a slight decrease.

06:06:09 20 **Q** Now, a slight decrease -- do you know what the percentage
21 decrease is if you go from, roughly, 100 on that chart down to
22 close to the zero line? What's that percentage?

23 **A** I haven't done the calculation.

24 **Q** Do you know that that calculation, if you produce it, is
06:06:27 25 something on the order of magnitude of 95 percent?

Bowers - Cross/Nichols

1 MR. KRATKA: Objection. I believe that misstates the
2 previous charts.

3 THE COURT: All right. I'm not going to make a
4 decision on that. Allow him to ask the question.

06:06:44

5 BY MR. NICHOLS:

6 Q Do you -- have you -- so you haven't calculated the
7 percentage in reduction at the Baytown Complex on reportable
8 events over that time period, correct?

9 A From mid-2006 to 2012.

06:06:53

10 Q You have not -- you have not --

11 A And as all statisticians will tell you --

12 Q Yes, sir.

13 A -- statistics lie. I look at the general shape in the form
14 of engineering judgment a valid way to analyze data that has
15 noise in it, what is the general trend. It is decreasing with
16 time.

06:07:13

17 Q Yes, sir.

18 A That's what we want.

19 Q Yes, sir. That's what you want --

06:07:23

20 A How steep was the decline depends on whether you include
21 the outlier year.

22 Q Yes, sir. But what you --

23 THE COURT: The outlier year being what, the hurricane
24 year?

06:07:32

25 THE WITNESS: Yes.

Bowers - Cross/Nichols

1 THE COURT: All right.

2 BY MR. NICHOLS:

3 Q So what you want, though -- what you want at a facility is
4 a trend line that's going down in terms of the number of
06:07:43 5 reportable events.

6 A Absolutely.

7 Q Now, did you ask anyone, Mr. Bowers, to look not only at
8 the number of reportable emission events -- and you'll agree
9 with me the Court is going to have all this stuff with him. You
06:07:51 10 understand that a recordable emissions event, if it involves .01
11 of a pound of a pollutant, that it's recorded, correct?

12 A It may be.

13 Q So we're looking --

14 A If it's required to be recorded --

06:08:10 15 Q Sure.

16 A -- I have confidence that Exxon would follow the rules.

17 Q Yes. Because, as we all know, heaven help us all, we got a
18 lot of records in this case, right? Exxon keeps a lot of
19 records on everything, right?

06:08:32 20 A No. I don't concede that.

21 Q Okay. So -- but with respect to the number of recordable
22 emission events, you'll agree with me that, if you drill down,
23 you're dealing with events that could involve as little as .01
24 pounds of a pollutant, correct --

06:08:45 25 A Correct. And it could be 20,000 pounds as a recordable

Bowers - Cross/Nichols

1 event.

2 **Q** -- depending on what the TCEQ sets as the reportable
3 quantity for a particular event, correct?

06:09:07

4 **A** If an emission event falls below TCEQ's threshold for
5 reporting, it's classified as recordable.

06:09:29

6 **Q** And do you remember that when we looked at -- the Court can
7 do this on its own. But remember, we looked at the list of
8 fires that you got events on there that last -- that have
9 duration of down to .02 hours? You know that, don't you? You
10 have recordable events on your fires table that go down to .02
11 hours in duration, correct?

12 **A** Yes. If it was --

13 **Q** What is -- what --

06:09:44

14 **A** -- qualified, recorded, and classified by Exxon as a fire,
15 it is on that chart.

16 **Q** Right. So what is .02 of an hour? How much -- how many
17 minutes is that?

18 Just to make sure Mr. Kratka knows where I'm
19 going, let's look at the chart itself.

06:10:02

20 **A** A couple of minutes.

21 **Q** A couple of minutes?

22 MR. NICHOLS: So I'm looking at the fire chart, your
23 Honor.

24 THE COURT: Okay.

06:10:11

25 MR. NICHOLS: It says, "Recordable event" --

Bowers - Cross/Nichols

1 THE COURT: What exhibit?

2 MR. NICHOLS: This is Exhibit Number 438.

3 THE COURT: Whose exhibit?

4 MR. NICHOLS: It's the Plaintiffs'. It's one of

06:10:16 5 Mr. Bowers' and Ms. Rock's charts.

6 BY MR. NICHOLS:

7 Q So "Recordable Event: Mechanical, Emissions to the
8 Atmosphere Due to a Small Fire at the Receptacle from Extension
9 Cords."

06:10:27 10 Right?

11 A Yes.

12 Q What was the root cause of this particular event, do you
13 know?

14 A Yes. It was an electrical cord used in an inappropriate
06:10:40 15 service when it was in poor condition.

16 Q Okay. So you --

17 A It should not have been used.

18 Q So you would consider that to be a human error To use that
19 extension cord?

06:10:50 20 A It's possible that it had something that you couldn't see,
21 the fault.

22 Q Sure. Maybe it was just a faulty extension cord, right?

23 A Could be. Or a faulty outlet.

24 Q So what was the root cause of that, do you know, the true
06:11:00 25 root cause?

Bowers - Cross/Nichols

1 But, the point was -- you see --

2 **A** Exxon classified it as a fire.

3 **Q** Yeah. I think we got that picture.

4 So -- but at the end of the day -- at the end of
06:11:10 5 the column, we have a duration listed of .02 hours, correct?

6 **A** Yes.

7 **Q** And how many minutes? Just a couple of minutes?

8 **A** Yes.

9 **Q** So --

06:11:21 10 **A** It started smoking, you unplug it. Why did it happen?

11 **Q** Yes. And the point, Mr. Bowers, is that ExxonMobil, the
12 men and women there recorded that, right?

13 **A** Yes.

14 **Q** They record everything. Are you aware of anything that's
06:11:37 15 happened out there that involves any amount of emission that has
16 not been recorded somewhere, even if it lasts for a minute or
17 two minutes?

18 **A** I commend them on that. I believe the testimony yesterday
19 said they record it as this so they can document it and take
06:11:54 20 action to prevent it from happening again.

21 **Q** Absolutely.

22 MR. NICHOLS: That's all I've got.

23 THE WITNESS: I think that's great.

24 BY MR. NICHOLS:

06:12:00 25 **Q** Good.

Bowers - Cross/Nichols

1 MR. NICHOLS: That's all I've got.

2 THE COURT: Do you want to follow up a bit? How much
3 time do you have to follow up?

06:12:08

4 MR. KRATKA: I think it would be better to recess
5 until tomorrow for me. We may not be much more.

6 THE COURT: Pardon me?

7 MR. KRATKA: We better recess until tomorrow, given
8 the hour.

06:12:18

9 THE COURT: Everybody agree? Okay. All right. Then
10 give me a moment or so and I'll get this all done. I've got a
11 couple of things to do. Don't go away. I want to get your
12 time.

13 (Court recessed for the day at 6:12 p.m.)

14

15

16 C E R T I F I C A T E

17

18 I certify that the foregoing is a correct transcript
19 from the record of proceedings in the above-entitled matter, to
20 the best of my ability.

21

22 By: /s/ Gayle L. Dye

04-17-2014

23 Gayle L. Dye, CSR, RDR, CRR

Date

24

25